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No. 1.

Notice to Physicians.

According to the printed rules of the Biological Laboratory, it is closed during the month of June to allow the Biologist, who has no assistant, his well-earned vacation. This year he will take his vacation later, of which due notice will be given. So, physicians desiring laboratory work can have it done without interruption until they receive such notice.

Annual Meeting of the State Medical Society and of the Board of Health.

These bodies will meet in Raleigh on Tuesday, the 24th instant. At 12 M. on Wednesday the conjoint session of the two will take place. It promises to be unusually interesting and instructive, and it is earnestly desired that every superintendent of health who possibly can will attend. Such gatherings are

always helpful, and it is well for us to get together at least once a year and compare notes.

Dr. Ernest P. Foster, Dr. Abner Alexander.

It is with sincere regret that we chronicle the passing away of these two good men. Dr. Foster, at the time of his death, was Superintendent of Health of Franklin county. He was always the courteous gentleman and conscientious official. The same can be said of Dr. Alexander. The latter was for several terms a member of the Legislature, and we wish to put it on record that the cause of the public health and the medical profession never had, in the writer's experience, a more earnest and, when his party was in power, a more efficient friend in the General Assembly. May they sleep well.

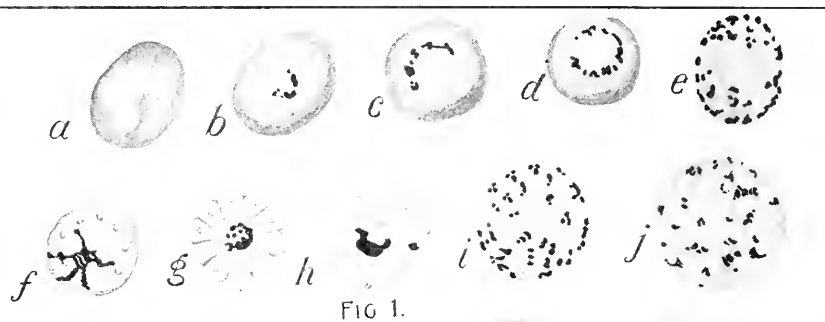


FIG 1.

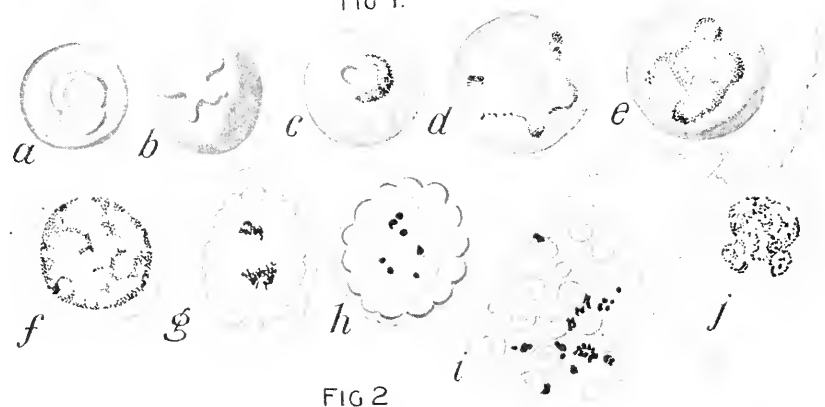


FIG 2

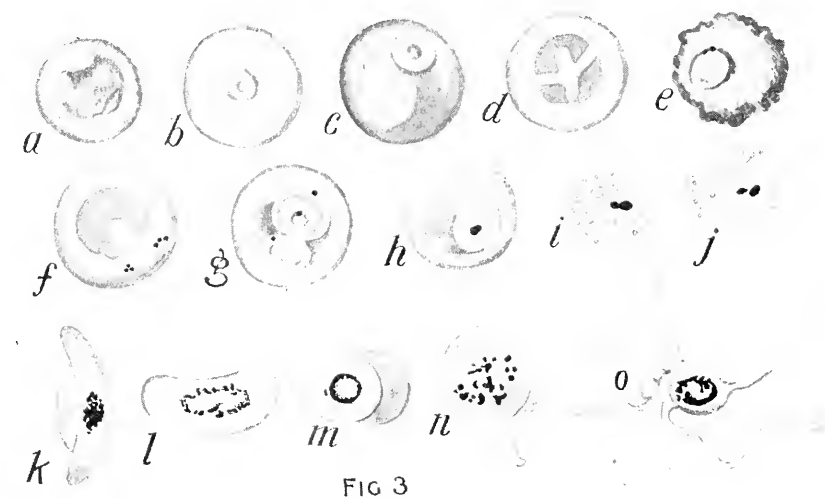


FIG 3

The Etiology of Malaria.

BY GERALD MCCARTHY,

Biologist N. C., Board of health.

The disease variously called "Malaria," "Chills and Fever," "Ague," and other names, was clearly recognized by physicians in the days of Aristotle. It was then as now the peculiar scourge of swampy regions, more especially in warm climates. But until comparatively recent times malaria was a common and fatal disease even in northern countries. Up to the beginning of the eighteenth century malaria of the chronic, pernicious type was epidemic and very fatal in England. During the same century, owing to the great advances in hygiene and the improved condition of the houses of the common people, the disease rapidly declined, and soon after the beginning of the nineteenth century became practically extinct in England. At the present time on the continent of Europe a line drawn along the tops of the Pyrenees mountains and following the Lyons mountains through Lyons and the upper Rhone valley, thence following the tops of the Alps and through the valley of the Danube by Vienna, thence along the tops of the Carpathian mountains and northerly through Russia, until lost in the swamps of the Dneiper, will divide the continent into two parts, north of which line malaria is now rare and sporadic, while south of the line it is endemic, and like a smouldering fire ever ready, on the relaxation of hygienic measures, to burst forth. In the northern region of Europe only the tertian form is known. In the south the quartan form predominates, and in regions notorious for bad hygienic conditions the chronic and pernicious form is common. In North Carolina so far the Laboratory

of the State Board of Health has received no blood sample showing the quartan parasite. Only the tertian form of malaria seems to exist in this State. In all regions of the north temperate zone the three winter months—December to February, inclusive—show the minimum prevalence of malaria. The maximum in the northern regions is from May to September. In the more southern regions the maximum occurs from August to October.

THE CAUSE OF MALARIA.

Up to the year 1880 the universal opinion, even among well-informed physicians, was to the effect that malaria was an air-borne disease, due in some mysterious way to emanations from decaying, water-soaked vegetation. In the year named Dr. Laveran, a French army surgeon, first clearly demonstrated the connection between the disease and a protozoan parasite, which is always found in the blood during acute attacks of malaria. Since 1880 numerous investigators in Italy, Germany, America and England have verified and extended Laveran's observations. The most recent and important advances in elucidating the etiology of the disease are due to the work of English physicians, among whom the more noted names are those of Manson, MacCallum and Ross. Ross first clearly determined by the experimental method that the malarial parasite during different parts of its life-cycle lives in the bodies of humans and mosquitoes. Further he showed that only mosquitoes of the genus *Anopheles* act as malaria-carriers for humans. The common mosquitoes of our houses, in both seacoast and upland regions, is not *Anopheles* but *Culex*. *Culex* acts as a disseminator of malaria among birds but not among humans.

THE LIFE HISTORY OF THE MALARIA PARASITE.

There are two very distinct species of the malaria organism. These are designated *Haemamalba tertiana* and *H. quartana*. They are directly correlated with the forms of malaria from which they take their specific names. The genus *Haemamalba* belongs to the natural order Sporozoa of unicellular animals, which order also includes the parasites causing malaria in birds and many animals and splenic or "Texas" fever in cattle.

Both species of the malarial organism are obligatory parasites and are known to exist only in the bodies of one or other of their hosts—mankind and mosquitoes. It is possible and probable that there is an as yet unknown segment in the life-cycle of these parasites. Many observations and conservative deductions point that way, but so far no one has discovered the missing link. The principal grounds for supposing the existence of an unknown segment of the life-cycle of the malarial parasites are as follows:

Malaria is known to be endemic in portions of India and Africa where there are no human inhabitants. The power of flight of the malaria mosquito is very slight and the creature rarely ever flies more than one mile from its place of birth. Yet it exists in uninhabited regions and seems able to convey malaria to chance visitors to such regions. It has long been known to physicians that the tearing up of the soil during the so-called malaria season frequently leads to malaria in an epidemic form. Finally it has been recently shown by Dr. J. M. Smith in New Jersey that the true malaria mosquito may exist in both of two nearby towns which, so far any one can see, have similar surroundings and same

class of people, with constant intercommunication. Yet in one town malaria may be epidemic and in the other original cases practically unknown. In Paris, France, no case of original malaria has developed within the memory of the oldest living physician. Yet the malaria mosquito, *Anopheles maculipennis*, is not uncommon in Paris, especially in the parks and public gardens, where the populace frequently gather in large crowds. In Paris, too, there are numerous residents who had formerly contracted malaria in Algeria and other notoriously malarious countries. These persons are known to carry in their blood the resting or crescent spores of the parasite. From our knowledge of the case and the theory, such persons must be frequently bitten by the *Anopheles*, and then the latter will surely bite citizens wholly free from malaria. Our present knowledge and the accepted theory of the disease would require that every one bitten by the malaria-infected *Anopheles* should contract acute malaria, but the fact is, in Paris, at least, they do not. Yet this exception to the rule does not invalidate the oft-proven fact that there can, under ordinary circumstances, be no acute malaria without the bite of an *Anopheles* mosquito.

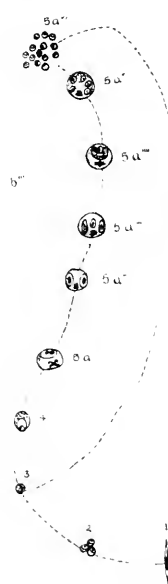
Malarial fevers are commonly classified into the following kinds: Quotidian, or paroxysm recurring daily; Tertian, or paroxysm recurring every second day; Quartan, or paroxysm recurring every third day. There is also the so-called Estivo-autumnal, or pernicious form. Finally, physicians recognize clinically two groups called respectively benign and malignant malaria.

Biologists, however, recognize but two species of parasite, and therefore only two kinds of fever—tertian and quartan.

The so-called quotidian fever is merely a double infection of the ordinary tertian and the so-called Estivo-autumnal fever is tertian in a chronic or specially virulent form. Plate I, Fig. 1, shows the life-cycle of the quartan parasite as it exists in the human blood—*a* is the blood corpuscle just infected; *b*, *c*, *d*, *e*, *f*, show successive advances in the maturity of the parasite; *g* and *h* show the beginning of sporulation. Figs. *i* and *l* are two extra-corporeal conditions of the fully-grown spore. One should be flagellated, but frequently at this part of the cycle the parasite seems to live an arrested life for a while and then degenerates and fall to pieces.

Plate I, Fig. 2, shows the life-cycle of the tertian parasite; *a*, *b*, *c*, *d*, *e* and *f* show successively maturing phases of the parasite within a blood corpuscle; *g* and *h* are the sporulating stages. In quartan fever the stage *g* resembles a symmetrical daisy-like figure; in tertian fever this phase resembles more a bunch of grapes; *i* and *j* are extra-corporeal, sexual forms or "gametes" of the spore—the flagellate form being the male. These coalesce and recommence the grand cycle, but only outside the human body, *i. e.*, naturally within the body of the mosquito, who has abstracted the spores with blood from some malaria-infected person. In the human body alone the cycle ends at *h*, where the non-sexual spores break from the corpuscle in which they had developed, and after being carried about in the blood stream for awhile they find their way into new corpuscles and so begin again the cycle until the disease is checked by quinine or other causes. The bursting forth of the spore is concomitant with the chill stage of the disease, while the renewed attack of the spores upon the blood cells is the cause of the fever stage.

Plate I, Fig. 3, shows the life-cycle of the malignant or pernicious forms; *a*, *b*, *c*, *d*, *e*, *f*, are the successive stages as in the two preceding figures; *g* shows a double infection of a blood corpuscle, common in malignant malaria; *l* and *j* are the sporulating stages; *k* is the crescent or "resting-spore stage" of the parasite within the human body; *l*, *m*, *n*, *o*, are stages of the development of the crescent into the flagellate form. These latter changes take place only outside of the human body, *i. e.*, in nature they occur only within the body of the mosquito. But these changes also may take place in a sample of malarial blood kept under the microscope on a glass slide.



as previously shown, the crescents soon proceed to develop into the forms shown at *i*, *j*, Figs. 1 and 2, and at *n*, *o*, Fig. 3. In all of these figures the rounded form represents the female gamete and the flagellate form the male gamete or body. The result of the sexual fusion is the production of a slender, rod-like form resembling *l* in Fig. 4, but wholly differing from that form in physiological significance. The new form in the body of the mosquito soon penetrates the wall of the insect's stomach and attaches itself to the exterior surface of that organ. There it forms around itself a sort of cyst, and within this it develops a vast number of spores which soon in turn rupture the walls of the cyst and swim free for a time in the body cavity of the mosquito. Eventually, by some unknown attractive force, the new sporozoites gather into the salivary gland and duct of the mosquito and there remain ready to infect a new human victim as soon as the mosquito bites again. The mosquito injects the parasite with the venom that these insects always inject into the blood when they bite, in order to render the blood more fluid and easier to suck in. In each and every stage here described, those not illustrated as well as those pictured, the phases and changes in the complete life-cycle of the mosquito are described from actual specimens and dissections. There is no theory in it, nor is there anything taken for granted. Every stage as described is absolutely known to exist, and the fact may be verified by any one possessing the necessary apparatus, time and skill.

The best time to find the parasite in the human blood is six to eight hours before or after a chill. The crescent forms are never found in acute cases until after some weeks of fever. The

ear is the best organ to puncture. A new steel pen with one nib removed is the best lancet. This need not be sterilized, nor is it necessary to wash the ear with alcohol. Stretch skin lightly over fingers and drive the lancet in one-eighth inch with a single rapid blow. Do not press or knead the part. Discard first few drops. Blood is best examined fresh and unstained with one-twelfth inch oil immersion lens. A lower power is not satisfactory. In pernicious malaria the destruction of blood corpuscles is rapid and very great—often four-fifths the normal number are destroyed by the parasites.

THE DIFFERENT SPECIES OF MOSQUITOES.

In the Eastern United States we have only two *genera* of mosquitoes of much economic importance. These are *Culex*, the common brown-legged, clear-winged mosquito, of which we have about twenty-two species, but only two of real importance. These are *C. pipiens*, the common house mosquito of the upland country, and *C. sollicitans*, the ring-legged salt-water mosquito, which is the more common species within twenty miles of the seashore. The malaria mosquito is *Anopheles*, of which we have three species, but one is quite rare. Of the other two, *Anopheles maculipennis*, the "speckled-winged mosquito," is the malaria species; the other species, *A. punctipennis*, "smoky-winged mosquito." The latter is suspected but not certainly known to convey the malaria germ when it bites. The other species has been proven beyond cavil to be a common carrier of the infection. Until we are better informed, however, we should, as a matter of safety, wage an uncompromising warfare against all *Anopheles* mosquitoes, and need not even spare *Culex*.

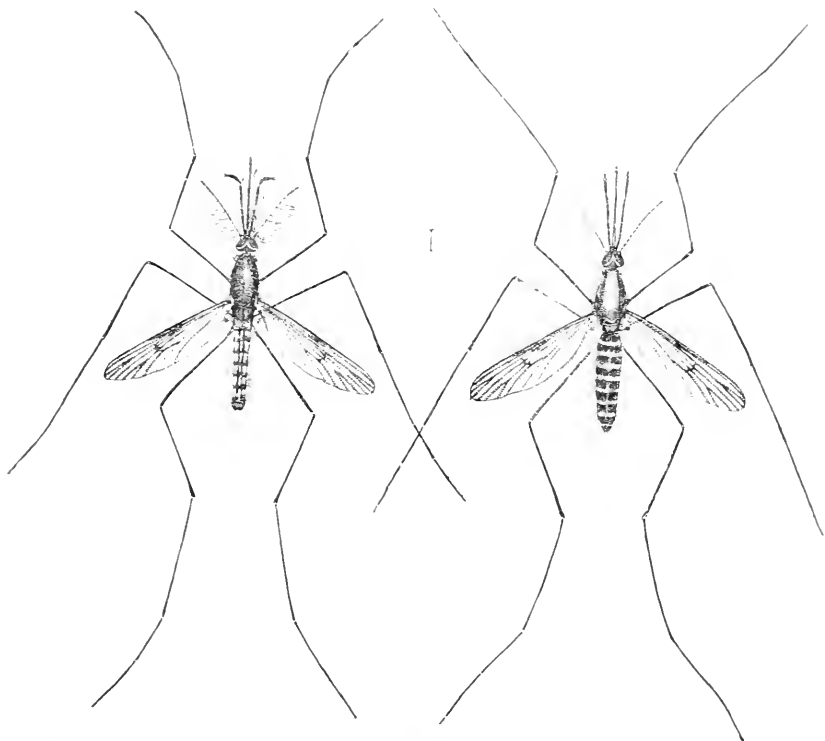


FIG. 5.—*ANOPHELES MACULIPENNIS*.
(After Howard, Bull. 25, U. S. Dept. Agr.).

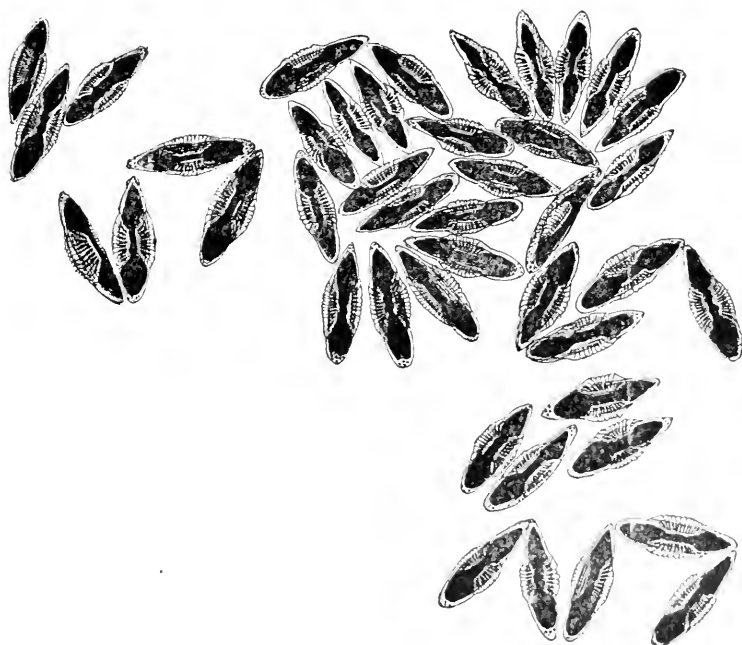


FIG. 6.—EGGS OF *ANOPHELES*.
(After Howard, Bull. 25 U. S. Dept. Agr.).

Fig. 5 shows *Anopheles maculipennis*, male at left, female at right. Fig. 6 shows the eggs of *Anopheles* as usually laid by the insect upon water, and Fig. 7 shows at left the appearance of half-grown larva or "wrigglers," two stages,

and at the right a larva or "wriggler" of *Culex*. Fig. 8 shows another view of the same larva as they lie feeding in the water. *Anopheles* above lies just below the surface; *Culex* below lies in an oblique direction from surface.

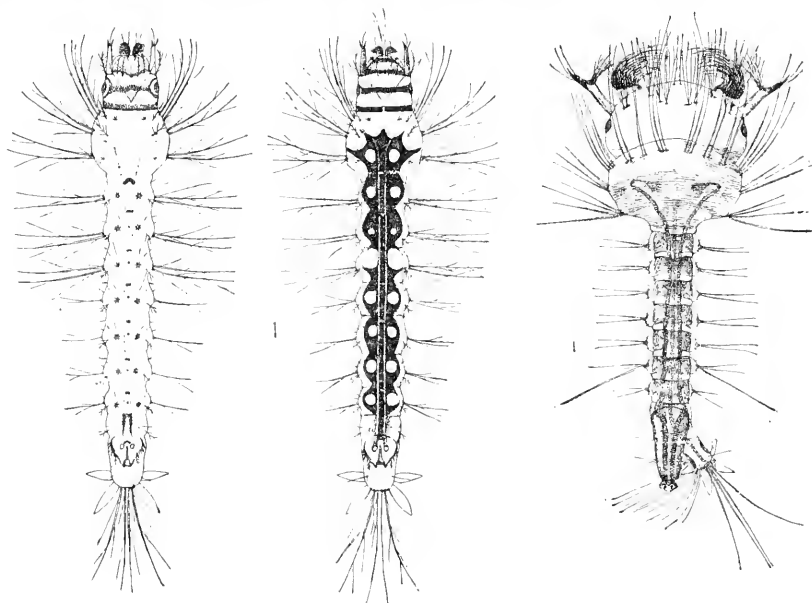


FIG. 7.—LARVÆ FORMS OF ANOPHELES (AT LEFT) AND CULEX (AT RIGHT) MOSQUITOES.
(After Howard, Bull. 25, U. S. Dept. Agr.).

These illustrations of mosquito larvæ should be carefully studied by every one living in a malarious neighborhood. As will be seen, the appearance of the *Anopheles* and *Culex* larva are very dissimilar, and it should be an easy matter to determine which genus we find in our rain-water barrels, or in chance pools, ponds or ditches within a half mile of the house. Whenever the narrow-headed, slender wriggler is found in any pond or other water, that water should at once be removed by drainage or the surface should be kept covered with a thin stratum of oil, as will be described further on. As a general rule, the wrigglers found in rain-water barrels and in

foul or polluted ditches or ponds near houses belong to the genus *Culex*. But *Anopheles* is frequently found also in such places, though it prefers remoter pools where green alga and water plants abound. Neither genus is likely to be found in ponds or vessels containing tadpoles, crabs or fishes. Ditches and pools having weedy or grassy margins are excellent places to look for *Anopheles* larvæ. The *Anopheles* thrives in salty or brackish water, according to Dr. J. M. Smith of New Jersey, who has for the last few years devoted much time to the study of the celebrated and ferocious mosquitoes of that State.

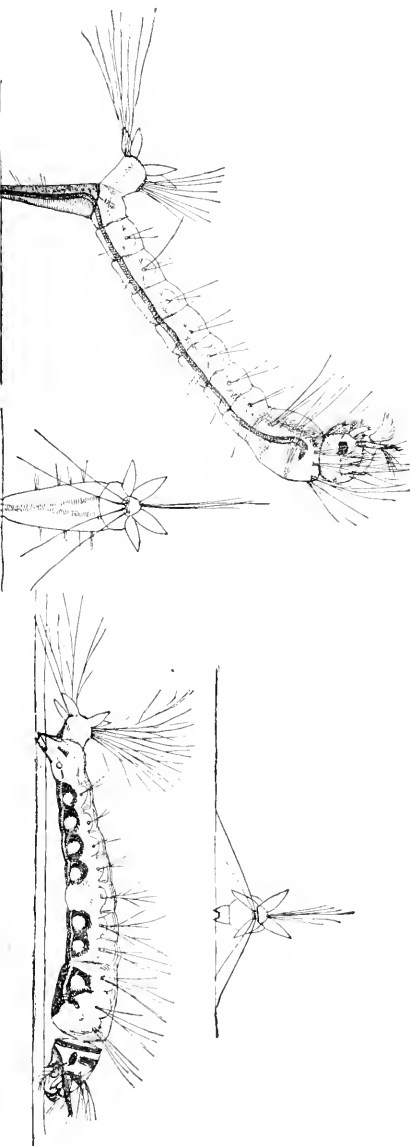


FIG. 8.—LARVÆ FORMS OF ANOPHELES AND CULEX AS SEEN IN THE WATER.
(After Howard, Bull. 25 U. S. Dept. Agr.).

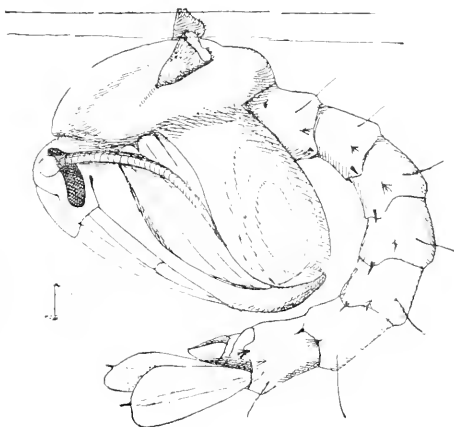


FIG. 9.—PUPAL FORM OF ANOPHELES.
(After Howard, Bull. 25 U. S. Dept. Agr.).

Fig. 9 shows the pupal form of *Anopheles*. This is the stage intermediate between the larva and the winged forms. It usually lasts but a day or two. Fig. 10 shows the egg masses and larva of *Culex*, with one enlarged wriggler at right. Fig. 11 shows the pupal stage of *Culex*.

As will be noticed, it is much smaller than the similar phase of *Anopheles*. Fig. 12 shows the mature form of *Culex pipiens*, the common house mosquito of our uplands. The female is pictured above, the male below.

Few persons ever see a male mosquito. The males never bite. They live upon fruit juices alone and as a rule never come into houses or alight upon people's hands or face. The female mosquito

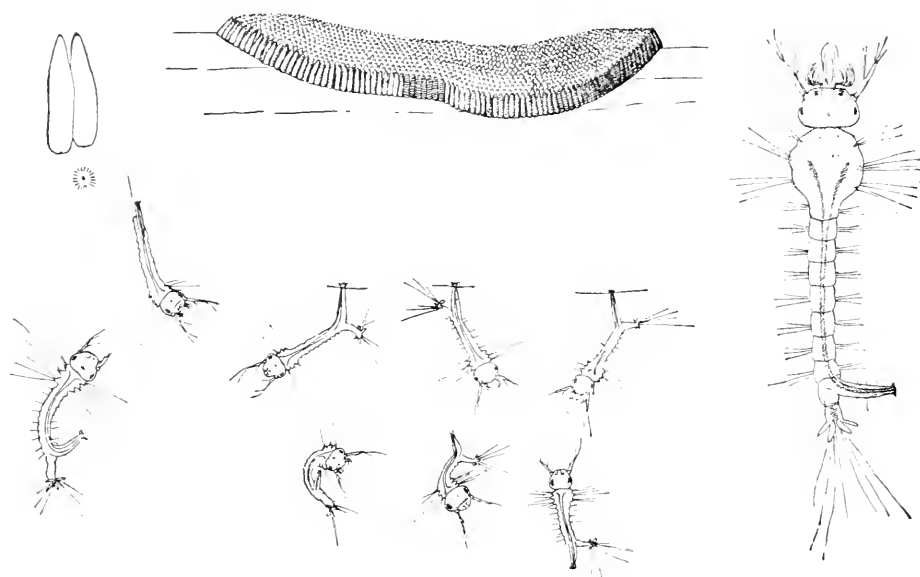


FIG. 10.—EGG MASSES AND LARVÆ FORM OF CULEX.

(From Harward, Bull. 25 U. S. Dept. Agr.).

alone is blood-thirsty. This particular and favorite beverage of the female mosquito is supposed to be correlated with her egg-laying duties. It is imagined that mosquito eggs will not mature unless stimulated by human blood, but as

millions of mosquitoes live and propagate in swamps remote from human habitation, it is impossible that they can always secure blood to stimulate the activity of the ovaries.

It is important that every person exposed to punctures of the malaria mosquito should be able to distinguish the mature or winged form of *Anopheles* from the winged forms of the *Culex* mosquitoes. The following are the more obvious distinctions:

Culex is comparatively smaller and more heavily built; *Anopheles* is larger and lighter. *Culex* has comparatively short legs and when at rest is graceful in appearance; *Anopheles* has very long legs and appears clumsy when at rest. *Culex* has clear wings; *Anopheles* has black spotted or smoky wings. *Culex* when standing on a more or less level surface or biting has the body nearly parallel with this surface and the head

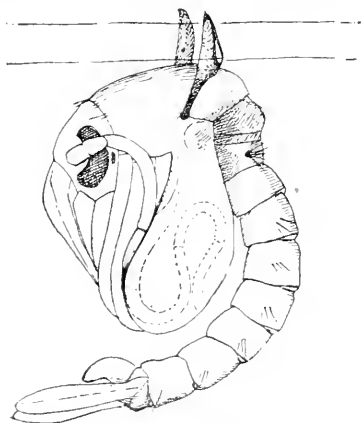


FIG. 11.—PUPAL FORM OF CULEX.

(After Harward, Bull. 25 U. S. Dept. Agr.).

projects beyond the front legs; *Anopheles* in a similar situation has the body oblique or nearly perpendicular to the supporting surface and the front legs are away beyond the head. The body of *Culex* is humped or bent at the tho-

hibernates in the holes left in trees and dry banks by swallows, squirrels and other wild burrowing creatures. *Culex* seems more tender than *Anopheles*, and always disappears early in the autumn. *Anopheles* may usually be found flying

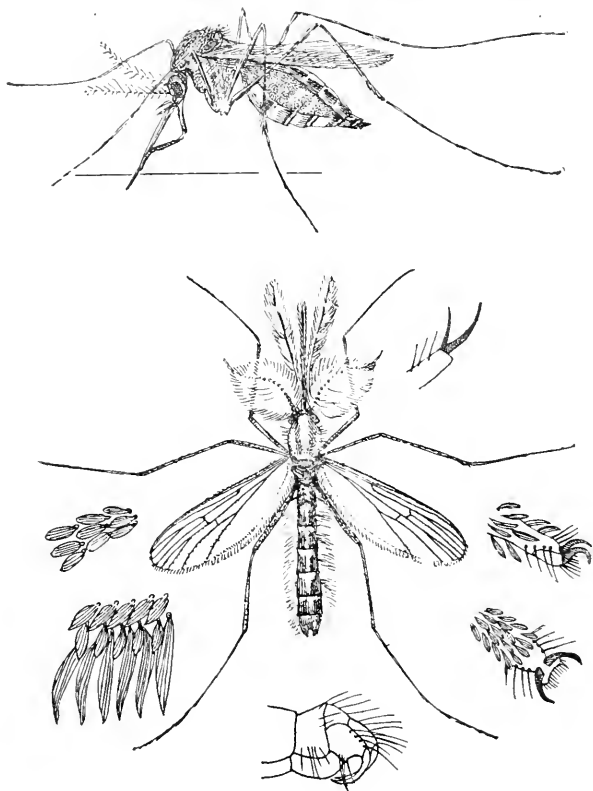


FIG. 12.—MATURE FORM OF *CULEX* (FEMALE ABOVE).

(After Howard, Bull. 25 U. S. Dept. Agr.).

rax; that of *Anopheles* is nearly a straight line from the tail to the beak.

The upland *Culex* and *Anopheles* mosquitoes pass the winter in the winged state. They lie hidden in cellars, stables, attics, and in the hollows of trees, etc. *Anopheles* also, according to Dr. Smith,

as late as December in North Carolina, and in houses or cellars heated by a furnace these insects may remain active all winter and bite people, conveying malaria at any time. As we have said, the upland *Culex* breeds only in water not very salty, but it may be very foul.

The seacoast mosquito breeds only in salt or brackish water, never in fresh water. Anopheles can breed in water either fresh or salt, but is not usually found in streams or ponds grossly polluted by sewage. The running of city

pools, hollows of trees, and among water plants lining the margins of ponds, etc., make the extermination of this species in any given locality impracticable. We must be content to repress it to keep its numbers down. The limits of practica-

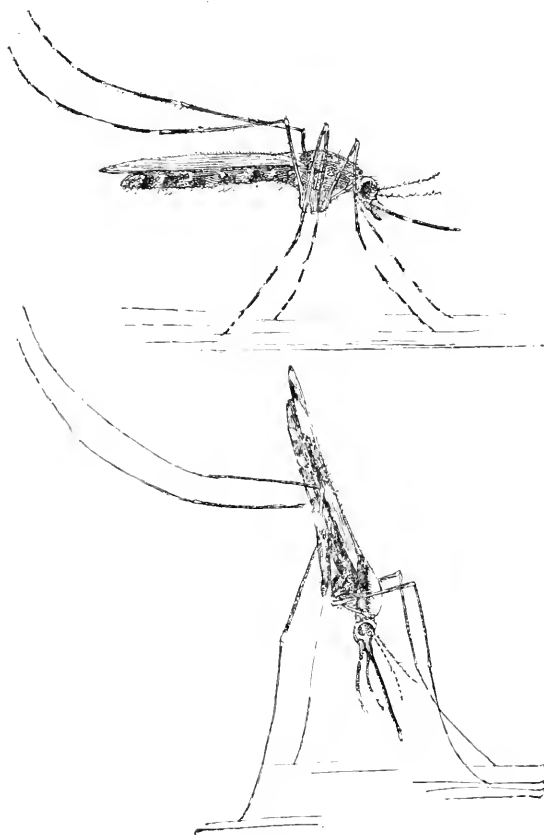


FIG. 13.—RESTING POSITIONS OF CULEX (ABOVE) AND ANOPHELES (BELOW).

(After Howard, Bull. 25 U. S. Dept. Agr.).

sewage into streams does not, therefore, tend to induce or increase malaria, as many seem to think. The facility with which the malaria mosquito can hide during the cold season and breed in any sort of water, and even in very shallow

ble work are, however, quite important. We can at a comparatively small cost reduce the prevalence of all the mosquito pests to from three-fourths to nine-tenths the ordinary uncontrolled numbers and annoyance. Drainage is the great and

all-important remedy for mosquitoes. The drainage must be thorough, so as to leave no hollows or pools. Even the depression made by the foot of a man walking over soft ground may serve to breed hundreds of mosquitoes. Permanent bodies of water should be stocked with fish, especially the top minnow—*Fundulus* in fresh and *Gambusia* in salt water. Pike and other predacious fishes are not desirable in such ponds, as they destroy the useful insect-eating fishes. The margins of all ponds and sluggish creeks should be kept free from weeds and grasses. Sluggish waters which cannot be stocked with fish should be oiled with crude petroleum once every three or four weeks from June 1st to November 1st—one ounce of oil to fifteen square feet is sufficient. Fishes are better than oil, and as oil is liable to destroy the fish in a pond or stream, it should not be used where it is possible to stock the water with minnows. Aquatic water insects, crabs and frogs should never be harmed, as they do good work in reducing the numbers of mosquitoes. Finally it must be said that mosquitoes breed only in stagnant or very slow-flowing and shallow waters. Bold streams with rapid currents, or large deep ponds with clean margins, will not breed these pests.

There are every season advertisements of the wonderful anti-malarial effect of some new tree or plant when grown near houses. The only grain of truth in these stories is that all fast-growing plants cause the evaporation of a considerable amount of water from the soil. One plant is as good as another for this purpose if the same amount of leaf surface is exposed to the sun. But drainage by ditching and the other treatments above described are cheaper and far more effectual than soil-drying plants of any

kind. There have been of recent years put upon the market by enterprising manufacturers many anti mosquito nostrums of the usual patent, self-acting, miraculous kind. These nostrums are invariably "fakes" intended solely to convey money into the pocket of the advertiser. There is no chemical treatment of water for mosquitoes more effectual or cheaper than crude petroleum.

The salt-water mosquito is a day-light flier, but the upland *Culex* and the *Anopheles* mosquitoes are twilight fliers. Therefore to escape being bitten by the malaria mosquito we have only to make our houses insect-tight with wire screens and remain within from an hour before sunset until an hour after sunrise. This simple and practicable precaution is an absolute protection against malaria, even in the most notorious malarial sections. Large railroad construction gangs have in this way been protected from malaria while building through swamps where malaria was known to be endemic among the natives.

In 1902 two English physicians were sent by the English war office to test the value of wire screens against malaria by living in the district at the mouth of the Tiber in Italy. The district named has from time immemorial been noted for the fatal and inveterate type of malaria there endemic. The Englishmen took no quinine and went freely about among the malaria-stricken inhabitants, drinking swamp water from a ditch which flowed past their door. They made their house, which was an ordinary straw-thatched hut, insect-tight by means of wire screens. They were careful to be within doors one hour before sundown and remained within until one hour after sunrise. They kept up this life for the three most malarious months of the season and did not contract malaria, where-

as all around them the natives were regularly shaking. This was a crucial test of the value of wire screens and is a lesson that should be remembered by physicians in malarious regions. Where it is impossible for all persons to remain within doors during the dangerous hours as above described, the same end can and has on many occasions been attained by enclosing the head and neck in a mosquito-proof veil and the hands in thick gloves. This veil should be of double thickness and should be carefully stitched to the cap above and at bottom sewn to firm cloth flaps arranged to slip down over the shoulders and be tied under the arms. The hands must be encased in heavy leather gloves free from holes. The gloves must come well up on the arms and be tied there to prevent slipping off. The coat and pants should be thick enough to prevent the insect from piercing through with her beak.

The only other mosquito-repellant worth mentioning is oil of citronella. This oil is the commonly-used odor in cheap toilet soap. It can be bought at any drugstore. A few drops may be added to a teaspoonful of lard or a little vaseline and rubbed lightly upon the parts which must be exposed to insect bite. This protection is not satisfactory against *Anopheles*, but it is an almost certain preventative as against the sea-coast mosquito and other *Culex* species. Visitors to the seashore and sportsmen in swampy regions, even where malaria is not feared, would do well to carry with them a small phial of oil of citronella. A few drops of this oil placed upon the pillow on retiring will prevent visitations from mosquitoes during sleep. Where oil of citronella may not be at hand, a fair substitute is ordinary cheap scented toilet soap rubbed or smeared dry on hands and other exposed parts. A

fresh onion rubbed on the skin is a good repellent, as is oils of pennyroyal and lavender. But all these are inferior to oil of citronella.

Review of Diseases for March, 1904.

SEVENTY-EIGHT COUNTIES REPORTING.

Ninety-six counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of March the following diseases have been reported from the counties named:

MEASLES.—Alleghany, in all parts; Ashe, 20 cases; Bladen, 12; Burke, many; Caldwell, 20; Caswell, several; Catawba, 23; Chatham; Clay, in all parts; Cleveland, several; Cumberland; Davidson; Duplin, 10; Durham, a few; Edgecombe, several; Forsyth; Gaston, many; Pitt, 3; Polk, many; Rowan, 50; Rutherford, a few; Scotland, 10; Surry, a few; Swain; Union, 10; Vance, 16; Wake, 8; Watauga, 10 or 15; Wilkes, 2; Yadkin, many; Yancey, many—31 counties.

WHOOPING-COUGH.—Burke, in all parts; Craven, several; Durham; Edgecombe, a few; Forsyth; Gaston, a few; Granville, 15; Iredell, 4; Jackson, 10; Jones, a few; Martin, many; Mecklenburg; Nash, many; Onslow, 10; Pitt, 6; Rutherford, a few; Surry, 20; Swain; Wake, 55; Wayne, a few—20 counties.

SCARLATINA.—Davidson, 1; Forsyth, 15; Iredell, 1; McDowell, 6; Randolph, a few; Rockingham, a few; Stanly; Surry, 5; Wilkes, 1—9 counties.

DIPHTHERIA.—Burcombe, 1; Cabarrus, 1; Cumberland, 1; Edgecombe, 2; Forsyth, 4; Haywood; Lincoln, 1; New Hanover, 1; Perquimans, 1; Pitt, 3; Randolph, 3; Stanly; Wake, 1; Wilkes, 1—13 counties.

TYPHOID FEVER.—Alamance, 2; Ashe, 2; Bladen, 1; Gates, 2; Iredell, 1; Jones, 1; Madison, 8; New Hanover, 4; Perquimans, 2; Pitt, 1; Robeson, a few; Union, 10; Wake, 7; Watauga, a few; Wilkes, 1; Yadkin, several—16 counties.

MALARIAL FEVER.—Chatham, Duplin, Jones, Pamlico and Pender—5 counties.

MALARIAL FEVER, PERNICIOUS.—Chatham, 2.

MALARIAL FEVER, HEMORRHAGIC.—Pamlico.

INFLUENZA.—Alamance, general; Caswell; Clay; Cumberland, general; Currituck; Davie, general; Gaston; Gates, Henderson, general; Hertford; Lincoln; Moore; Onslow, general; Pender; Person; Rockingham; Transylvania; Vance, general; Wake; Warren, general; Watauga; Yancey—22 counties.

PNEUMONIA.—Alexander; Camden; Cumberland, in all parts; Currituck; Davie, in all parts; Gates, 4; Harnett, a few; Henderson, some in all parts; Hertford, a few; Hyde, in all parts; Jones, 8; Martin; Onslow, in all parts; Pamlico, several; Person; Randolph; Wake, in many parts; Watauga—18 counties.

MUMPS.—Caswell; Randolph, in many parts; Scotland; Swain; Vance, in all parts—5 counties.

ROSEOLA.—Caswell, Randolph.

GERMAN MEASLES.—Rockingham, epidemic.

VARICELLA.—Clay, in all parts; Gaston; Scotland.

SMALL-POX.—Alamance, 10; Anson, 15; Ashe, 200; Bladen, 10; Cabarrus, 10; Caswell, 32; Catawba, 3; Cleveland, 6; Cumberland, 4; Davidson, 7; Davie, 7; Duplin, 7; Durham, 125; Forsyth, 23; Gaston, 4; Granville, 13; Greene, 30 or 40; Guilford, 14; Iredell, 6; Mecklenburg, 2; New Hanover, 7; Person, 1; Pitt, 4; Polk, 1; Randolph, 2; Richmond, 26; Robeson, several; Rowan, 2; Rutherford, 8; Scotland, several; Surry, 12; Swain, 2; Vance, 42; Wake, 1; Wayne, several; Wilkes, 40 or more; Yadkin, 1—37 counties.

DISTEMPER, IN HORSES.—Burke and Clay.

No diseases reported from Bertie, Carteret, Dare, Johnston, Northampton, Pasquotank, Washington and Wilson.

No reports received from Beaufort, Brunswick, Cherokee, Columbus, Franklin, Graham, Halifax, Lenoir, Macon, Mitchell, Montgomery, Orange, Sampson and Stokes.

Summary of Mortuary Reports for March, 1904.

(TWENTY-FIVE TOWNS.)

	White.	Col'd.	Total.
Aggregate population.....	86,150	59,550	145,700
Aggregate deaths..	109	148	257
Representing temporary annual death rate per 1,000.....	15.2	29.8	21.2
<i>Causes of Death.</i>			
Typhoid fever.....	0	2	2
Scarlet fever	1	0	1
Malarial fever	1	0	1
Diphtheria.....	0	1	1
Whooping-cough..	0	1	1
Measles	1	1	2
Pneumonia.....	16	28	44
Consumption.....	14	24	38
Brain diseases.....	7	4	11
Heart diseases.....	11	20	31
Neurotic diseases..	5	4	9
Diarrhoeal diseases	3	1	4
All other diseases..	47	54	101
Accident	2	7	9
Violence.....	1	1	2
	109	148	257
Deaths under five years.....	12	30	51
Still-born	4	11	23

Mortuary Report for March, 1904.

TOWNS AND REPORTERS.	RACES.	POPULATION.		TEMPORARY ANNUAL DEATH RATE PER 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrheal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	Total. Deaths. under five years.	Still born.
		By Races.	Total.	By Races.	Total.																		
Charlotte	W.	11,000		9.8								1		1				6	1		9	2	1
Dr. F. O. Hawley.	C.	7,200	18,200	26.7	16.5							3						12			16	25	4
Durham	W.	8,000		16.5								7	2	3	1	1		7	1		20	31	5
Dr. N. M. Johnson.	C.	5,000	13,000	48.0	28.6							2		2				7	1				
Edenton	W.	1,200		0.0																	0	0	
Dr. T. J. Hoskins.	C.	1,900	3,100	0.0	0.0																		
Elizabeth City	W.	5,000		12.0								1	1			1	2				5	11	1
Dr. I. Fearing.	C.	3,000	8,000	24.0	16.5							1	2		1		2				6	11	1
Fayetteville	W.	2,500		4.8									1								1	11	4
Dr. A. S. Rose.	C.	2,300	4,800	52.2	27.5			1				5	1	2	1						10	11	3
Greensboro	W.	6,100		21.6								4	4	1			2				11	20	1
Jno. S. Michaux, C. C.	C.	4,000	10,100	27.0	23.8	1						3	1		1		3				9	20	3
Henderson	W.	2,100		28.6								1	1	1			1			1	5	7	
Dr. John H. Tucker.	C.	1,700	3,800	14.1	22.1				1					1									
Laurinburg	W.	900		0.0																	0	1	
Dr. G. D. Everington.	C.	600	1,500	20.0	8.0							1									1		
Lenoir	W.	1,200		10.0											1						1	1	
Dr. S. W. Shell.	C.	300	1,500	0.0	8.0																0	1	
Lexington	W.	800		0.0																	0	0	
J. H. Moyer, Mayor.	C.	500	1,300	0.0	0.0																0	0	
Marion	W.	800		105.0										1			6				7	8	
Dr. B. L. Ashworth.	C.	400	1,200	30.0	80.0							1									1	1	
Monroe	W.	1,850		6.5													1				1	2	
Dr. Jno. M. Blair.	C.	600	2,450	20.0	9.8							1											
Oxford	W.	1,200		10.0									1								1	6	
Dr. S. D. Booth.	C.	1,250	2,450	48.0	29.4							1	1	1			1	1					
Raleigh	W.	8,000		15.0								1	4	2			3				10	19	1
T. P. Sale, Clerk B. H.	C.	5,800	13,800	18.6	16.5							4	1				3	1			9	19	1
Rocky Mount	W.	1,600		22.5							1	1				1					3	4	3
Dr. J. T. Shubrick, H. O.	C.	1,500		8.0	15.5												1						
Salem	W.	3,300		0.0																	0	0	
S. E. Butler, Supt. H.	C.	350	3,650	0.0	0.0																		
Salisbury	W.	3,900		27.7								2	1	1			5				9	13	1
Dr. H. T. Trantham.	C.	2,500	6,400	19.2	24.4							1		2			1				4		
Southport	W.	900		0.0																	0	0	
Dr. D. I. Watson.	C.	500	1,400	0.0	0.0																0	0	
Tarboro	W.	2,000		18.0									1				2				3	5	
Dr. Wm. J. Thigpen.	C.	500	2,500	48.0	24.0												1						
Wadesboro	W.	1,000		12.0								1					1				1	2	
Dr. J. H. Bennett.	C.	700	1,700	17.1	14.1													1					
Waynesville	W.	1,600		15.0									1		1						2	2	
Dr. Thos. Stringfield.	C.	400	2,000	0.0	12.0																0		
Weldon	W.	700		17.1									1								1	2	
J. T. Gooch, Mayor.	C.	750	1,450	16.0	16.5								1								1		
Wilmington	W.	11,000		20.7			1					2	1	2	1	10					19	60	4
Dr. Chas. T. Harper.	C.	10,000	21,000	49.2	34.3							3	7	7	2	18	3				41	9	
Wilson	W.	3,500		13.7								1				3					4	6	3
Dr. W. S. Anderson.	C.	3,300	6,800	7.3	10.6								1				1						
Winston	W.	6,000		10.0			1					1					3				5	21	3
Dr. J. L. Hanes.	C.	4,500	10,500	42.7	24.0							1	3	2		3	2	4	1		16	3	4

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

County Superintendents of Health.

Alamance	Dr. T. S. Faucette.	Jones.....	Dr. N. G. Shaw.
Alexander	Dr. C. J. Carson.	Lenoir	Dr. C. L. Pridgen.
Alleghany	Dr. Robt. Thompson.	Lincoln	Dr. John W. Saine.
Anson	Dr. J. H. Bennett.	McDowell.....	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon	Dr. F. L. Siler.
Beaufort	Dr. D. T. Tayloe.	Madison	Dr. W. J. Weaver.
Bertie	Dr. H. V. Dunstan.	Martin	Dr. W. H. Harrell.
Bladen.....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin.
Brunswick	Dr. J. A. McNeill.	Mitchell.....	Dr. V. R. Butt.
Buncombe	Dr. D. E. Sevier.	Montgomery	Dr. M. P. Blair.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod.
Cabarrus.....	Dr. R. S. Young.	Nash	Dr. J. P. Battle.
Caldwell	Dr. W. P. Ivey.	New Hanover	Dr. W. D. McMillan.
Camden.....	Dr. J. L. Lister.	Northampton.....	Dr. H. W. Lewis.
Carteret	Dr. F. M. Clarke.	Onslow.....	Dr. E. L. Cox.
Caswell	Dr. S. A. Malloy.	Orange.....	Dr. D. C. Parris.
Catawba	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. T. A. Kirkman.	Pasquotank	Dr. J. B. Griggs.
Cherokee.....	Dr. B. B. Meroney.	Pender.....	Dr. R. J. Williams.
Chowan.....	Dr. T. J. Hoskins.	Perquimans.....	Dr. C. C. Winslow.
Clay.....	Dr. P. B. Killian.	Person	Dr. J. A. Wise.
Cleveland	Dr. B. H. Palmer.	Pitt.....	Dr. Zeno Brown.
Columbus.....	Dr. I. Jackson.	Polk	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph	Dr. W. J. Moore.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. F. J. Garrett.
Currituck	Dr. H. M. Shaw.	Robeson	Dr. H. T. Pope.
Dare	Dr. W. B. Fearing.	Rockingham	Dr. Sam Ellington.
Davidson.....	Dr. Joel Hill.	Rowan	Dr. W. L. Crump.
Davie	Dr. M. D. Kimbrough.	Rutherford.....	Dr. T. B. Twitty.
Duplin	Dr. A. J. Jones.	Sampson	Dr. John A. Stevens.
Durham	Dr. N. M. Johnson.	Scotland	Dr. A. W. Hamer.
Edgecombe	Dr. W. J. Thigpen.	Stanly.....	Dr. V. A. Whitley.
Forsyth.....	Dr. W. O. Spencer.	Stokes	Dr. W. V. McCanless.
Franklin	Dr. E. S. Foster.	Surry	Dr. John R. Woltz.
Gaston.....	Dr. H. F. Glenn.	Swain.....	Dr. A. M. Bennet.
Gates.....	Dr. W. O. P. Lee.	Transylvania	Dr. C. W. Hunt.
Graham	Dr. V. J. Brown.	Tyrrell.....	
Granville	Dr. S. D. Booth.	Union	Dr. John M. Blair.
Greene.....	Dr. C. S. Maxwell.	Vance.....	Dr. H. H. Bass.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. J. L. McCullers.
Halifax	Dr. I. E. Green.	Warren.....	Dr. M. P. Perry.
Harnett.....	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. F. Abel.	Watauga.....	Dr. C. W. Phipps.
Henderson	Dr. J. G. Waldrop.	Wayne.....	Dr. Williams Spicer.
Hertford	Dr. C. F. Griffin.	Wilkes.....	Dr. W. P. Horton.
Hyde	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson.
Iredell	Dr. M. R. Adams.	Yadkin	Dr. T. R. Harding.
Jackson.....	Dr. R. L. Davis.	Yancey	Dr. J. L. Ray.
Johnston	Dr. Thel Hooks.		

[You are asked to fill out and mail one of these forms to the Superintendent of Health of your county on or before the third of each month, that he may use it in making his report to the Secretary of the State Board.]

Have any of the following diseases occurred in your practice during the month just closed. If so, state number of cases.

Whooping-cough	Typhoid Fever
Measles	Typhus Fever
Diphtheria	Yellow Fever
Scarlet Fever	Cholera
Pernicious Malarial Fever	Smallpox
Hemorrhagic Malarial Fever	Cerebro-spinal Meningitis

What have been the prevailing diseases in your practice?

.....

Has any epidemic occurred among domestic animals? If so, what?

.....

What is the sanitary condition of your section, public and private?

.....

.....

General Remarks:

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..... M. D.

BULLETIN

OF THE

North Carolina Board of Health.

Published Monthly at the Office of the Secretary of the Board, Raleigh, N. C.

GEO. G. THOMAS, M. D., *Pres.*, Wilmington.

S. WESTRAY BATTLE, M. D., Asheville.

HENRY W. LEWIS, M. D., Jackson.

J. L. NICHOLSON, M. D., Richlands.

W. P. IVEY, M. D., Lenoir.

FRANCIS DUFFY, M. D., New Bern.

W. H. WHITEHEAD, M. D., Rocky Mt.

J. L. LUDLOW, C. E., Winston.

RICHARD H. LEWIS, M. D., *Secretary and Treasurer*, Raleigh.

VOL. XIX.

MAY, 1904.

No. 2.

House Infection of Tuberculosis.*

BY LAWRENCE F. FLICK, M. D.,

Director of the Phipps Institute for the Study,
Prevention and Cure of Tuberculosis,
Philadelphia.

[We earnestly commend this admirable article by Dr. Flick, one of the highest authorities on tuberculosis, to our readers, and we hope that our physicians will transmit this knowledge to the families under their care, especially those having and predisposed to consumption; and that they will be deeply impressed thereby with the great importance of the thorough ventilation of living and sleeping apartments and of the disinfection of rooms occupied by consumptives. —Ed.]

The kaleidoscopic phenomena of this earth as we see them around us are the result of a continuous alternation of

life and death. In this beautiful panorama death is as necessary as life. Something is always dying that something else may live. Inorganic matter continuously is being changed into organic matter and organic into inorganic. For changing organic matter into inorganic matter God has created the micro-organic world.

A micro-organism which, perhaps, has slipped away from its natural place in organic nature, and in consequence has done much damage to man, is the tubercle bacillus. In the great division of organic matter it generally is credited to the vegetable kingdom. In a classification of micro-organisms it is technically known as a facultative saprophyte. By this is meant that ordinarily it gets its living as a parasite on some higher organism, but that it may subsist on dead organic matter as a saprophyte. In a sub-classification of micro-

* Read at the Maryland Tuberculosis Exposition, January 26, 1904. From Maryland Medical Journal, February, 1904.

organisms it is known as a facultative anaerobic parasite. By this is meant that ordinarily it grows in a tissue from which air is excluded, but that it may grow in some substances, under certain conditions, in the presence of air.

When the tubercle bacillus grows in the tissue of a human being or of an animal it gives rise to a condition which has forcibly arrested the attention of man because of the suffering, sorrow and misery which accompany it and follow in its wake. In the early history of medicine this condition was named phthisis and consumption. In the more recent times it has been divided into two epochs, the earlier being called tuberculosis and the latter consumption. In earlier times, too, the condition was viewed by mankind generally as a providential visitation, the punishment for sin, touching not only the immediate offender, but reaching the offspring to the third and fourth generation. Science has demonstrated that it is a mere episode in nature subject to natural laws and absolutely under the control of man's will.

Man is interested in tuberculosis because it is a disease. The same processes and phenomena in other fields of nature give pleasure to man, but here they give discomfort, and are followed by sorrow and misery, because man himself is the field of operation. The word disease means want of ease. Quite naturally, man has given much thought to how to avoid getting tuberculosis and how to get rid of it when it afflicts him. By reason of his superior intelligence, man has always been able to control his organic foes so far as visible objects are concerned, but in his fight against the micro-organic world he is confronted with a much more serious problem. Much has been done, however, to throw light upon this newly-discovered enemy,

and already it is demonstrated that men need no longer get tuberculosis, and that if he is so unfortunate as to get it, he need not die of it. Unfortunately, the knowledge which makes this new dispensation possible is still in the hands of a few.

All diseases which are caused by micro-organisms are communicable. This is a self-evident proposition. Whatever is living can only come from a parent, and phenomena which are due to the growth and development of living organisms cannot arise except by reason of the growth and development of those organisms. There is a difference, however, in the manner in which parasitic micro-organisms are conveyed from one person to another. Some are conveyed through the instrumentality of insects, some by means of water and others by contact, direct or indirect. Some parasites have two kinds of hosts, a major and a minor host; some can reproduce themselves outside of a host, and others always remain dormant when out of the host. Parasites which have two hosts and parasites which can reproduce themselves outside of a host can be conveyed from one person to another over long distances, while parasites which are conveyed by contact can only be conveyed within a limited, circumscribed environment. The yellow fever parasite, for instance, is conveyed through the mosquito, the typhoid fever parasite by water, and the tubercle bacillus by contact.

All diseases which are conveyed by contact are termed contagious. Contagious diseases are not necessarily alike, however. There is a great difference in the intensity of contagion. The acute contagious diseases are much more intensely contagious than the chronic con-

tagious diseases. In principle the contagion of all is the same, but in practice the method differs widely. Small-pox, measles and scarlet fever, for instance, are contagious in exactly the same sense as tuberculosis, so far as the principle is concerned—that is, they are conveyed by contact—but the intensity of the contagion is so much greater with them than with tuberculosis that practical measures for the prevention of the former would in no sense apply to the latter. Small-pox, measles and scarlet fever affect the whole body, and contagion is rapidly given off from the entire body. Tuberculosis is a local disease, and contagion is given off from one or two points only. In small-pox, measles and scarlet fever the matter which carries the micro-organisms may be invisible; in tuberculosis it always is gross and easily seen. In small-pox, measles and scarlet fever places and things soon become intensely contaminated; in tuberculosis it takes a long time to produce such a result. Intimate association, therefore, with a person suffering from small-pox, measles and scarlet fever without contracting the disease is impossible unless the person thus exposed has an immunity from vaccination or previous attack, while intimate association with a consumptive without contracting the disease is quite feasible.

The contagion of tuberculosis, indeed, is of a kind by itself. It differs somewhat from the contagion of every other disease of which we have knowledge. It is so unique that writers have had some difficulty in finding an epithet descriptive of it. This is the reason why many writers object to calling tuberculosis contagious. Some would have us call it communicable, but this term is too generic. Others have suggested the epithet

infectious for it, and this does not fit at all, because it has a specific meaning which only applies to such diseases as malaria and yellow fever. The most striking feature about the communicability of tuberculosis is that it depends almost entirely upon the house. An inclosure of some kind is so necessary for the conveyance of the disease from one person to another that contagion is impracticable without it. It is, therefore, with good reason that we use the phrase house infection of tuberculosis when we speak of the practical manner in which the disease is spread in a community. The word infection, of course, is used in the broad sense of conveyance, and the word house in the broad sense of an inclosure. The phrase tells pretty nearly the whole story of the communicability of tuberculosis, and covers the entire proceeding from the beginning to the end—garnering the seed, preparing the soil, implantation, rearing the tender plant, nurturing the full-grown shoot, maturing and harvesting.

The house is the granary of the tubercle bacillus outside of its host. Were it not for the house the tubercle bacillus would soon have to perish from the face of the earth. It could not be preserved. Sunlight, air and water are its natural enemies. The water dissolves it out of its cache, and the sunlight and air destroy it. How long tubercular matter may remain vital in the open air has not been definitely determined, but all agree that the time is very short. Even when the bacilli in such matter are not killed they are weakened so that they will not readily take root when planted. In the house, on the contrary, tubercular matter may remain vital for a long time, because it becomes dry and the broken-down tissue serves as a cache for the bacilli.

Even when the matter becomes finely pulverized so that the bacilli no longer have so much protection, it remains vital for a long time, because the sun and air cannot get to it.

Ordinarily the tubercle bacillus is dependent upon other micro-organisms for its exit from its host. These are the streptococcus and the staphylococcus. They are pus-producing organisms, and are very adept at destroying tissue. When they join forces with the tubercle bacillus they kill and soften the tissue which has been invaded by the tubercle bacillus, and then nature casts it out. A double purpose is served in this way, the tubercle bacillus is helped out of its host and is given a protective covering towards preservation while out of the host. The broken-down tissue which is thrown out forms the protective covering.

In the transition of the tubercle bacillus from one host to another we have a beautiful illustration of nature's jealous care of every form of life. The tubercle bacillus is a motionless, helpless micro-organism, which can grow and reproduce itself only under certain conditions in a definite soil, and which requires during the interim between its exit from one host and its entrance into another special protection, and for admission into a new host special opportunities. These are secured for it indirectly through its toxin and the toxins of its associates. By sensations set up in the nervous system it lures its victim into the very place where exist the best conditions for the preservation of its species and the best opportunities of finding a new host. Consumption is the autumn of tuberculosis, the blossom grown into ripe fruit. When it comes on the victim, by reason of his chilliness, malaise, and general feeling of helpless-

ness, seeks shelter in some inclosure, and is deluded with the idea that the farther he can get away from sunshine and fresh air the better are his chances of recovery. The house thus becomes the harvest field of the ripe tubercle bacillus, and the seed quite naturally falls into the very place which by nature is intended for its granary.

The house also prepares soil for the tubercle bacillus. We have every reason to believe that the bacillus cannot get a foothold in perfectly healthy, normal tissue. It is quite likely, indeed, that primordially the tubercle bacillus was a saprophyte only, and that its function in the world was to change dead organic matter into inorganic matter. It is easy to conceive how gradually it may have evolved into a parasite by growing on tissue which, while not dead, was much debased. At any rate, even at the present time it does not seem to be able to invade tissue until the tissue has been injured in some way, either by malnutrition, by traumatism, or through the agency of some other micro-organism. Malnutrition is one of the most common predisposing causes of tuberculosis.

The physical life of man and animals is a chemical process. There is a combination of certain elements through the instrumentality of a living cell, with involvement of beings endowed with life. Food, air and water are the substances used in the process. In proportion as these substances are at hand in proper quantities the being evolved is a healthy one, and in proportion as any of the substances are deficient or defective the being is an unhealthy one. Of the three substances required in this chemical process, air is perhaps the most important, and certainly the most necessary. Life may be maintained for some days without

food and water, but for a few minutes only without air. The same is true of health. A person may keep fair health on a stinted supply of food and water for a long time, but soon succumbs to a stinted supply of air. This probably is due to the fact that air plays a double role in health. It not only carries in oxygen for chemical purposes, but it carries out poisonous products of chemical action. It is believed by some that re-breathed air produces soil for the tubercle bacillus more through the poisonous products of combustion which are disseminated in the air than by reason of deficiency of oxygen. Probably it does by both. At any rate, housed human beings and animals are very prone to tuberculosis. Deficiency of oxygen certainly leads to malnutrition. Too much food and too little air not only lead to defective metabolism, but throw upon the organs of the body poisonous products which must be gotten rid of to the detriment of the whole system.

Implantation of the tubercle bacillus is greatly facilitated by the house. For implantation prolonged intimate contact with a person, place or thing which has been intensely contaminated with tubercular matter is necessary. The mere presence of a few tubercular bacilli is not sufficient. Everybody has some resisting power to tuberculosis, and with every one there is a minimal dose of tubercle bacilli which will give an implantation. No doubt this dose differs with different people, but resisting power of some kind exists to some extent in every one. Even in inoculation experiments on animals a minimal dose has been found below which injections prove negative. This minimal dose in a sense measures the individual's fighting capacity against the disease. So long as the minimal dose is not reached,

an implantation cannot take place. Frequent warfare against a dose below the minimal dose increases the resisting power of an individual and raises the minimal dose. With animals the minimal dose which can give an implantation gradually can be increased until an almost complete immunity has been established. Experiments upon animals have been made by inoculation. It is quite probable that by the natural mode of entrance of the tubercle bacillus into the system the minimal dose is larger than by inoculation. The natural mode of entrance is by the alimentary canal or the respiratory tract. At both of these ports of entry there is strong opposition to admission. The gastric juice has some germicidal powers, and all along the respiratory tract there are devices for keeping out micro-organisms. Beyond the ports of entry lie the lymphatics and lymphatic glands, and beyond these the phagocytic bodies of the blood, all of which wage war against micro-organisms that may pass the ports of entry. From what has been done experimentally on animals and from what we have been able to observe clinically on man, we have good reason to believe that the minimal dose of tubercle bacilli necessary for an implantation by the natural mode of entrance is quite large. This is not a mere speculation, either. Out of every five people who are intimately exposed to the contagion of tuberculosis for a long period of time under the most favorable conditions for an implantation, only one person develops the disease. This shows that implantation is exceedingly difficult, even under most favorable circumstances.

An inclosure is the one place in which contamination with tubercular matter can become sufficiently intense to create

an environment capable of overcoming the resisting power of man and producing an implantation. It is only in an inclosure that vital tubercular matter can accumulate. In the open air, water, sunlight and air devitalize it nearly as rapidly as it is given off. Tubercular matter ejected in a house, unless immediately devitalized, artificially dries and is distributed about in particles varying in size from big chunks to impalpable dust. In these particles the bacilli are cached and preserved. Gradually all the particles are reduced to dust, either by trituration, oxidation, or the action of saprophytes. This tubercle-laden dust settles on the walls, on furniture, and on everything in the inclosure. In the course of time there is quite an accumulation of vital tubercular matter in such a place, and every time the air is disturbed tubercle-laden dust is set in motion. Here, then, finally is an environment capable of giving an implantation of tuberculosis. Occupancy of such a room means constant inhalation and frequent deglutition of tubercular matter. Tubercle bacilli continuously find their way into the system, and it is only a question of time when more have gained entrance than can be successfully withstood by the guards and disease-fighters of the body. The result is implantation of tuberculosis.

The kind of inclosure which offers the best environment for the implantation of the tubercle bacillus is, first, the home, and second, the workshop. The home is of all places most prolific of new implantations of tuberculosis. It was on this account that in by-gone days tuberculosis earned for itself the reputation of being an inherited disease. Tuberculosis is a family disease. It can most easily be implanted around the hearthstone. It follows the family tree in its distribution,

and when it once gets into a family it follows that family in all directions until it either has exterminated the family or exhausted the soil, and has made what is left of the family immune. The part of the home in which implantations most frequently take place is the bedroom, and next to the bedroom the dining-room. The bedroom usually is the place where the victim of tuberculosis spends his last weeks or months—a period during which the disease is most intensely contagious. Among the very poor the dining-room often is used as a bunking-place for the stricken one until a day or two before death. Under such circumstances the dining-room becomes very much contaminated and becomes a prolific source of new implantation.

The workshop is a very common means of spreading tuberculosis. By workshop, of course, is meant any inclosure in which one or more people are employed. Tuberculosis is an extremely chronic disease, and usually runs a long course even in its contagious stage before its victim is incapacitated for his usual occupation. Some people work with the contagious stage of tuberculosis for the greater part of a working life-time, occasionally being thrown out of employment for a few weeks or months on account of an exacerbation, and again returning with as much vigor as before. Unfortunately, habits of men and women in the matter of spitting make it easy for a consumptive to contaminate his immediate environment in a shop, if not the entire shop. One consumptive, perhaps, cannot contaminate a large shop so as to produce an infectious environment of the entire shop, but he can produce an environment around his own stand capable of implanting the disease in one or more of those next to him, and before long he has asso-

ciates in the task of polluting the shop. In a workshop in which a case of tuberculosis exists careful investigation will reveal the presence of other cases in various stages of the disease. Deaths will occur from such a shop at regular intervals for an indefinite period so long as the shop is permitted to remain contaminated.

Inclosures such as hotels, churches, public halls, places of amusement, and public conveyances, in which people stop for a short time only, are not apt to give rise to many implantations of tuberculosis for two reasons. First, because a consumptive rarely remains in them long enough to produce a contagious environment capable of giving an implantation, and secondly, because healthy people seldom remain in them long enough to get an implantation. There is some danger of contracting the disease in such places for people who are employed in them in the capacity of cleaners and caretakers, but for the casual visitor practically there is no danger.

Things which have been intensely contaminated by having been used for a long time by a consumptive may give the disease to others when kept or used indoors. In the open air they may be harmless, unless worn upon the person. Contaminated furniture, carpet, and hangings of various kinds, when taken into a perfectly sterile house, may themselves contaminate the house sufficiently to create an environment capable of implanting the disease. The tubercular matter adhering to such articles is distributed about and settles on walls and floors. In the open air, on the other hand, tubercle-laden dust from such articles is apt to be scattered about over such a wide area as to make it impracticable for any one person

to get enough of it to give rise to an implantation.

The house nurtures the tubercular growth when an implantation has taken place. Mere implantation of the tubercle bacillus does not necessarily mean a development of a full-fledged tuberculosis. The disease always begins in a very small way, and then attracts practically no attention. The first crop develops and runs through its course, and a second follows perhaps a little larger than the first. This is followed by a third and fourth, each a little larger than the preceding one, and thereafter another larger still, until finally so much tissue has been invaded and destroyed as to make death inevitable. At any time during the progress of the disease prior to the destruction of tissue essential to normal functions of the body the economy has within itself the power of throwing off the disease. Autopsies prove that this often is accomplished by nature unaided by medicine. It probably would be accomplished in all cases were it not for the house.

In the beginning of the tubercular process the tendency to recovery is so great that the slightest aid to nature may turn the tide toward recovery. The process by which recovery takes place probably is healthy metabolism—that is, a perfect change of food into tissue. Implantation has taken place because the individual temporarily has been a little below par as a result of improper food, insufficient air, overwork, dissipation, an attack of some other disease, or some such matter, one or all. Under proper conditions the implantation is rooted up before it can grow into tuberculosis. All that may be needed is a little rest, a little extra food, and a little more fresh air. In some cases recovery might take place if a little

rest could be had, even without extra food and air; in others if better food could be had, even though no rest could be taken and the air supply could not be changed. But in all recovery would almost surely follow a life in the open air, in spite of bad food supply and overwork. Life in the open air enables one to digest coarser food and to do more work without fatigue than is possible indoors. This is probably due to the fact that in the open air the poisonous products of combustion are promptly removed from the system, and thus are prevented from embarrassing the entire organization. To cure tuberculosis we must have perfect metabolism, and this we only can have when enough fresh air is taken into the system night and day to oxidize the food and cleanse the blood. Imperfect metabolism predisposes to tuberculosis by debasing the tissues and making soil for the tubercle bacillus.

House life undoubtedly plays an important role throughout the entire course of tuberculosis to its culmination in consumption and death. With every recurring crop of tubercle the organs of the body become more embarrassed, and the economy is less able to carry on the warfare against the disease. When the disease is in the lungs, as it frequently is, the air supply grows less with each destruction of lung tissue. Fortunately, nature has given all air-breathing creatures ample lung capacity, enough and to spare, so that a great deal of lung tissue may be destroyed without interfering with the functions of the body, provided the air supply is right. Under these circumstances other organs, no doubt, supplement the lungs in their functions of elimination. Everything hinges upon an ample supply of fresh air, however. When this is at hand healthy metabolism

may be maintained even when the disease is advanced, and through this health may again be reached. Tuberculosis makes its progress because its victim is shut up in a house where he cannot get fresh air. Unfortunately for the poor, an ample supply of fresh air is impossible. Their homes, as well as their workshops, have been constructed on a mistaken idea that whatever shuts out air, heat and cold is conducive to health. The large death rate from consumption really must be ascribed in a great measure to bad ventilation in home and workshop.

The last scene of conflict in tuberculosis between the victim and his foe is the house. Tuberculosis develops into consumption because of the house. This does not mean that people could not get tuberculosis if they lived out of doors, for birds of the air and animals of the field get the disease. Tuberculosis, however, in itself would seldom prove fatal. Both animals and human beings may go through life with tuberculosis and reach old age without being seriously inconvenienced by it. Lots of animals and people do. Dr. Trudeau has shown by experiments on animals that life in the open air greatly retards the development of tuberculosis and promotes recovery. Rabbits which he inoculated and penned up died, while rabbits which he inoculated and permitted to run at large maintained good health, although they developed tuberculosis. In sanatoria where consumptives are made to live out of doors wonderful improvement sets in, even when the case is incurable. Frequently all the symptoms of consumption disappear, and the patient becomes comfortable even when so much tissue has been destroyed that recovery is physically impossible. In other words, even consumption in the open air loses all its most serious

symptoms. The house makes and maintains consumption, and consumption kills.

Consumption may be well termed a house disease. Without the house it cannot exist. It depends upon the house for its implantation, propagation, and for evolution of all its phenomena. The house is the place where the tubercle bacillus lies dormant in wait for its host; it is the place where the new host gets his implantation; it is the place where the tubercular subject gradually becomes a consumptive, and it is the place where the consumptive dies.

In studying the progress of civilization in the light of modern science one is struck with the egregious blunders into which man has been led by his desire for privacy and comfort. He has built his house to keep out his enemies, to protect himself from heat and cold, and to screen himself from the curiosity of his neighbor. He has sought to make his home his castle, but in reality he has made it the place wherein he courts death.

If man desires to free himself from the great white plague, he will have to retrace his steps from some of what he considers advanced points of civilization. He will have to learn, among other things, that fresh air is God's greatest gift on earth, and that whatever shuts out fresh air shuts out health and happiness. In house infection he will find the key to the entire problem of stamping out tuberculosis.

SUMMARY.

1.—Tuberculosis is a disease due to the parasitic growth of a micro-organism on the tissues of a human being or animal. Being due to organic life, it is communicable.

2.—Tuberculosis is contagious. The contagion of tuberculosis is different from the contagion of acute contagious diseases, however. It is slow and can be avoided easily in the presence of a consumptive, while that of acutely contagious diseases is rapid and cannot be avoided in the presence of those who have such diseases.

3.—The contagion of tuberculosis is closely associated with the house. An inclosure of some kind is necessary to make it effective.

4.—The house is the granary of the tubercle bacillus. It is the place in which tuberculous matter is kept vital until the bacillus can find a new host.

5.—Out of doors tubercular matter becomes devitalized in a short time through water, light and air. Enough cannot accumulate in a vital state to create a contagious environment.

6.—Everyone has some resisting power to tuberculosis. Some have more than others. Practically all have sufficient resisting power to withstand occasional exposure to tuberculosis and exposure out of doors.

7.—For an implantation of tuberculosis prolonged intimate exposure and an intensely contagious environment is necessary to overcome resisting power. This is had in the home and the workshop.

8.—The house prepares soil for the tubercle bacillus.

Review of Diseases for April, 1904.

SEVENTY-NINE COUNTIES REPORTING.

Ninety-six counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases the Su-

perintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of April the following diseases have been reported from the counties named:

MEASLES.—Alleghany, many cases; Bladen, 15; Burke, many; Caldwell, in all parts; Catawba, 5; Cherokee, 35; Cleveland, many; Cumberland, many; Davidson, many; Duplin, 4; Durham, a few; Edgecombe, in all parts; Franklin, a few; Gaston, a few; Granville, 8; Lincoln, 6; McDowell, 5; Mecklenburg, 12; Nash, many; New Hanover, 167; Polk, 3; Randolph, a few; Rockingham; Rowan, 100; Surry, 14; Swain, several; Transylvania, several; Vance, many; Wake, 4; Watauga, 20 or 30; Wilson, many; Yancey, several—32 counties.

WHOOPING-COUGH.—Cherokee, 40; Chowan, 1; Clay, several; Craven, a few; Duplin, 2; Edgecombe, several; Franklin, in all parts; Gaston, many; Granville, 6; Haywood, in all parts; Hertford, 7; Martin, many; New Hanover, 25; Onslow, 3; Pamlico, many; Pitt, 6; Randolph, a few; Sampson, many; Surry, 50; Swain, several; Vance, a few; Wake, 21—21 counties.

SCARLATINA.—Durham, 3; Forsyth, 15; Randolph, a few; Rockingham, a few.

DIPHTHERIA.—Chowan, 1; Durham, 2; Edgecombe, 7; Forsyth, 3; Iredell, 1; Mecklenburg, 2; New Hanover, 1; On-

slow, 3; Perquimans, 1; Pitt, 1; Stanly, 2; Wake, 2—12 counties.

TYPHOID FEVER.—Bladen, 1; Chatham; Craven, 1; Duplin, 1; Gaston, a few; Gates, 1; Harnett, a few; Iredell, 1; Madison, 5; Onslow, 1; Pender, 2; Pitt, 1; Randolph, 2; Rowan, 6; Stanly, 2; Wake, 5; Washington, 2; Wayne, 1; Yadkin—19 counties.

MALARIAL FEVER.—Caswell; Duplin; Gates, 12; Hertford; Pamlico; Sampson; Vance; Wake—8 counties.

MALARIAL FEVER, PERNICIOUS.—Sampson, a few; Wake, 1.

MALARIAL FEVER, HEMORRHAGIC.—Pamlico, 1.

INFLUENZA.—Anson, general; Caldwell, general; Caswell; Cumberland; Currituck, general; Davie, general; Duplin; Gaston; Lincoln; Pamlico, general; Randolph, general; Scotland; Transylvania; Watauga, general; Yancey—15 counties.

PNEUMONIA.—Alexander; Caswell; Currituck, in all parts; Gates, 6; Hyde, in all parts; Pamlico, in all parts; Pender, 1; Pitt; Randolph, in most parts; Sampson; Transylvania; Watauga, in nearly all parts—12 counties.

GERMAN MEASLES.—Craven, a few; Rockingham, in all parts.

MUMPS.—Caswell; Clay; Cumberland; Mecklenburg, 8; New Hanover, 24; Randolph; Sampson; Scotland—8 counties.

VARICELLA.—Camden; Cleveland; Mecklenburg.

SMALL-POX.—Alamance, 17; Alleghany, 7; Anson, several; Ashe, 25; Bladen, 3; Buncombe, 5; Cabarrus, 24; Caswell, 3;

Catawba, 1; Chatham, 3; Cumberland, 3; Davidson, 7; Davie, 11; Durham, 100; Forsyth, 27; Gaston, 3; Granville, 1; Guilford, 14; Henderson, 46; Johnston, 1; Mecklenburg, 2; New Hanover, 10; Pender, 1; Pitt, 1; Randolph, 6; Richmond, 17; Rowan, 2; Rutherford, 6; Sampson, 8; Scotland, a few; Stanly, 4; Swain, 2; Wake, 13; Wayne, 6; Wilkes, 78—35 counties.

CHOLERA, IN HOGS.—Clay, Hertford, Sampson, Washington.

DISTEMPER, IN HORSES.—Ashe, Burke, Lincoln.

RABIES, IN DOGS.—Sampson.

No diseases reported from Bertie, Carteret, Jackson, Northampton, Pasquotank, Robeson and Warren.

No reports received from Beaufort, Brunswick, Columbus, Dare, Graham, Greene, Halifax, Jones, Lenoir, Macon, Mitchell, Montgomery, Moore, Orange, Person, Stokes and Union.

Summary of Mortuary Reports for April, 1904.

(TWENTY-SIX TOWNS.)

	White.	Col'd.	Total.
Aggregate population.....	98,450	67,450	165,900
Aggregate deaths..	87	129	216
Representing temporary annual death rate per 1,000.....	10.6	22.9	15.6
<i>Causes of Death.</i>			
Typhoid fever	0	2	2
Malarial fever	0	1	1
Whooping-cough ..	0	1	1
Pneumonia.....	12	20	32
Consumption	8	28	36
Brain diseases	8	8	16
Heart diseases.....	6	5	11
Neurotic diseases..	3	7	10
Diarrhoeal diseases	7	1	8
All other diseases..	42	51	93
Accident	1	4	5
Violence.....	0	1	1
	87	129	216
Deaths under five years.....	16	34	50
Still-born	9	10	19

Mortuary Report for April, 1904.

TOWNS AND REPORTERS.	RACES.	POPULATION.		TEMPORARY ANNUAL DEATH RATE PER 1,000.	Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrhoeal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	TOTAL DEATHS.		Deaths under five years.	Still born.
		By Races.	Total.																		By Races.	By Towns.		
Asheville	W.	8,000		12.0	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	8	19	...	1
Dr. C. V. Reynolds.	C.	5,000	13,000	24.0	...	...	...	...	...	...	2	5	1	...	...	...	4	...	...	...	10	...	...	...
Charlotte	W.	11,000		15.3	...	...	...	...	...	...	2	1	1	1	...	...	10	...	...	...	14	22	12	5
Dr. F. O. Hawley.	C.	7,200	18,200	13.3	...	...	...	...	...	...	1	1	1	...	...	...	4	...	...	...	8	...	...	...
Durham	W.	8,000		9.0	...	...	...	...	...	...	...	2	...	...	...	...	3	...	...	...	10	16	1	...
Dr. N. M. Johnson.	C.	5,000	13,000	24.0	...	...	...	...	...	...	...	3	...	1	...	...	5	1	...	...	6	...	...	...
Edenton	W.	1,200		0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0	...	...
Dr. T. J. Hoskins.	C.	1,800	3,000	0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	...	...	...
Elizabeth City	W.	5,000		7.2	...	...	...	...	...	...	1	...	1	...	...	...	1	...	...	...	3	8	...	...
Dr. I. Fearing.	C.	3,000	8,000	20.0	...	...	...	...	...	...	2	1	...	...	...	...	2	...	...	...	5	...	3	1
Fayetteville	W.	2,500		0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12	12	4	...
Dr. A. S. Rose.	C.	2,300	4,800	62.6	...	...	...	...	...	...	1	3	2	1	...	...	4	1	...	...	0	...	...	...
Goldsboro	W.	3,500		3.4	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	4	1	2
Robt. A. Creech, H. O.	C.	2,600	6,100	13.8	...	...	...	...	...	...	2	...	...	...	...	...	1	...	...	...	3	...	...	...
Greensboro	W.	6,100		19.8	...	...	...	...	...	...	2	1	...	...	...	...	8	...	...	...	11	22	4	...
Jno. S. Michaux, C. C.	C.	4,000	10,100	30.2	...	...	...	...	...	...	2	1	1	...	2	...	5	...	...	...	11	...	6	1
Henderson	W.	2,100		11.4	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	2	5	...	...
Dr. John H. Tucker.	C.	1,700	3,800	21.2	...	...	...	...	...	...	1	1	...	...	...	...	1	...	...	...	3	...	...	...
Lenoir	W.	1,600		7.5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	2	1	...
Dr. S. W. Shell.	C.	400	2,000	30.0	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	...	...	...
Lexington	W.	800		0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	1	...	...
J. H. Moyer, Mayor.	C.	500	1,300	24.0	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...
Marion	W.	800		0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0	...	...
Dr. B. L. Ashworth.	C.	400	1,200	0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	...	...	...
Monroe	W.	1,850		13.0	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	2	...	...	...
Dr. Jno. M. Blair.	C.	600	2,450	0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	2	...	...
Oxford	W.	1,200		30.0	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	3	4	1	...
Dr. S. D. Booth.	C.	1,250	2,450	9.6	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...
Raleigh	W.	8,000		9.0	...	...	...	...	...	...	...	4	1	1	...	...	1	3	...	...	6	7	2	...
T. P. Sale, Clerk B. H.	C.	5,800	13,800	14.5	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	13	1	...
Reidsville	W.	2,900		8.3	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	2	5	...	...
Dr. J. T. Shubrick, H. O.	C.	1,300	4,200	18.5	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	1	...
Rocky Mount	W.	1,600		0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0	...	...
Dr. J. T. Shubrick, H. O.	C.	1,500	3,100	0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	...	...	...
Salem	W.	3,300		10.9	...	...	...	...	...	...	1	...	...	...	...	...	1	1	...	...	3	4	1	...
S. E. Butner, Supt. H.	C.	350	3,650	34.3	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Salisbury	W.	3,900		0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	2	1	...
Dr. H. T. Trantham.	C.	2,500	6,400	9.6	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...
Southport	W.	900		0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	1	...	...
Dr. D. I. Watson.	C.	500	1,400	24.0	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...
Tarboro	W.	2,000		12.0	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	2	...	...
Dr. Wm. J. Thigpen.	C.	500	2,500	24.0	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Wadesboro	W.	1,000		24.0	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	5	...	...
Dr. J. H. Bennett.	C.	700	1,700	51.4	...	...	...	...	...	...	2	...	...	...	...	...	1	...	...	...	3	...	...	...
Weldon	W.	700		0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	...	...	...
J. T. Gooch, Mayor.	C.	750	1,450	80.0	...	...	...	...	...	...	1	...	...	...	...	...	3	...	...	...	1	5	...	...
Wilmington	W.	11,000		20.7	...	...	...	...	...	...	2	2	1	3	1	3	7	...	...	...	19	41	5	...
Dr. Chas. T. Harper.	C.	10,000	21,000	26.4	...	1	...	...	...	...	3	3	1	4	1	8	1	...	...	...	22	...	9	3
Wilson	W.	3,500		6.8	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	9	1	...
Dr. W. S. Anderson.	C.	3,300	6,800	25.4	1	...	...	...	...	...	2	...	...	...	...	...	4	...	...	...	7	...	...	...
Winston	W.	6,000		2.0	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	14	...	1
Dr. J. L. Hanes.	C.	4,500	10,500	34.7	...	...	...	...	...	...	3	2	4	1	...	...	3	...	...	...	13	5	1	...

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

County Superintendents of Health.

Alamance	Dr. T. S. Faucette.	Jones.....	Dr. N. G. Shaw.
Alexander	Dr. C. J. Carson.	Lenoir	Dr. C. L. Pridgen.
Alleghany	Dr. Robt. Thompson.	Lincoln	Dr. John W. Saine.
Anson	Dr. J. H. Bennett.	McDowell	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon	Dr. F. L. Siler.
Beaufort	Dr. D. T. Tayloe.	Madison	Dr. W. J. Weaver.
Bertie	Dr. H. V. Dunstan.	Martin.....	Dr. W. H. Harrell.
Bladen.....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin.
Brunswick	Dr. J. A. McNeill.	Mitchell.....	Dr. V. R. Butt.
Buncombe	Dr. D. E. Sevier.	Montgomery	Dr. M. P. Blair.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod.
Cabarrus.....	Dr. R. S. Young.	Nash	Dr. J. P. Battle.
Caldwell	Dr. W. P. Ivey.	New Hanover	Dr. W. D. McMillan.
Camden.....	Dr. J. L. Lister.	Northampton.....	Dr. H. W. Lewis.
Carteret	Dr. F. M. Clarke.	Onslow.....	Dr. E. L. Cox.
Caswell.....	Dr. S. A. Malloy.	Orange.....	Dr. D. C. Parris.
Catawba	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. T. A. Kirkman.	Pasquotank	Dr. J. B. Griggs.
Cherokee.....	Dr. B. B. Meroney.	Pender.....	Dr. R. J. Williams.
Chowan.....	Dr. T. J. Hoskins.	Perquimans.....	Dr. C. C. Winslow.
Clay	Dr. P. B. Killian.	Person	Dr. J. A. Wise.
Cleveland	Dr. B. H. Palmer.	Pitt.....	Dr. Zeno Brown.
Columbus.....	Dr. I. Jackson.	Polk.....	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph	Dr. W. J. Moore.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. F. J. Garrett.
Currituck	Dr. H. M. Shaw.	Robeson	Dr. H. T. Pope.
Dare	Dr. B. Fearing.	Rockingham	Dr. Sam Ellington.
Davidson.....	Dr. Joel Hill.	Rowan.....	Dr. W. L. Crump.
Davie	Dr. M. D. Kimbrough.	Rutherford.....	Dr. T. B. Twitty.
Duplin	Dr. A. J. Jones.	Sampson	Dr. John A. Stevens.
Durham	Dr. N. M. Johnson.	Scotland	Dr. A. W. Hamer.
Edgecombe	Dr. W. J. Thigpen.	Stanly.....	Dr. V. A. Whitley.
Forsyth.....	Dr. W. O. Spencer.	Stokes	Dr. W. V. McCanless.
Franklin	Dr. R. F. Yarborough.	Surry	Dr. John R. Woltz.
Gaston.....	Dr. H. F. Glenn.	Swain.....	Dr. A. M. Bennet.
Gates.....	Dr. W. O. P. Lee.	Transylvania	Dr. C. W. Hunt.
Graham	Dr. V. J. Brown.	Tyrrell.....	
Granville	Dr. S. D. Booth.	Union	Dr. John M. Blair.
Greene.....	Dr. W. B. Murphy, Jr.	Vance.....	Dr. H. H. Bass.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. J. L. McCullers.
Halifax	Dr. I. E. Green.	Warren.....	Dr. M. P. Perry.
Harnett.....	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. F. Abel.	Watauga.....	Dr. C. W. Phipps.
Henderson.....	Dr. J. G. Waldrop.	Wayne.....	Dr. Williams Spicer.
Hertford	Dr. C. F. Griffin.	Wilkes.....	Dr. W. P. Horton.
Hyde	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson.
Iredell	Dr. M. R. Adams.	Yadkin	Dr. T. R. Harding.
Jackson.....	Dr. R. L. Davis.	Yancey	Dr. J. L. Ray.
Johnston	Dr. Thel Hooks.		

[You are asked to fill out and mail one of these forms to the Superintendent of Health of your county on or before the third of each month, that he may use it in making his report to the Secretary of the State Board.

Have any of the following diseases occurred in your practice during the month just closed. If so, state number of cases.

Whooping-cough	Typhoid Fever
Measles	Typhus Fever
Diphtheria	Yellow Fever
Scarlet Fever	Cholera
Pernicious Malarial Fever	Smallpox
Hemorrhagic Malarial Fever	Cerebro-spinal Meningitis

What have been the prevailing diseases in your practice?

.....

Has any epidemic occurred among domestic animals? If so, what?

.....

What is the sanitary condition of your section, public and private?

.....

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General Remarks:

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..... M. D.

..... 190.....

..... N. C.

BULLETIN

OF THE

North Carolina Board of Health.

Published Monthly at the Office of the Secretary of the Board, Raleigh, N. C.

GEO. G. THOMAS, M. D., *Pres.*, Wilmington.
S. WESTRAY BATTLE, M. D., Asheville.
HENRY W. LEWIS, M. D., Jackson.
J. L. NICHOLSON, M. D., Richlands.

W. P. IVEY, M. D., Lenoir.
FRANCIS DUFFY, M. D., New Bern.
W. H. WHITEHEAD, M. D., Rocky Mt.
J. L. LUDLOW, C. E., Winston.

RICHARD H. LEWIS, M. D., *Secretary and Treasurer*, Raleigh.

VOL. XIX.

JUNE, 1904.

No. 3.

**Annual Report of the Secretary of the
North Carolina Board of Health,
May 1, 1903—May 1, 1904.**

[Read at the conjoint session of the State Board
of Health with the State Medical Society, at
Raleigh, May 24, 1904.]

As must always be the case, the work of your Secretary during the past year has been largely of the usual routine character, dealing with the common every-day affairs of sanitation. These, however, are none the less important because they are commonplace, as they practically cover the whole field of hygiene. But we have one entirely new subject as applying to our State of great interest and importance, viz.:

UNCINARIASIS OR HOOKWORM DISEASE.

Inspired by the admirable address of Dr. Charles Wardell Stiles, Zoologist of the U. S. Public Health and Marine Hospital Service, at our last meeting at Hot Springs on the *Uncinaria Americana*, of which he was the discoverer,

and its prevalence in our Southern States, I promptly set to work to interest our physicians in the subject. In several issues of the BULLETIN the matter was called to their attention, a summary of Dr. Stiles' official report and other articles being printed, and the medical reader was urged to send specimens of feces from suspected cases to our laboratory for diagnosis. The response to this, I regret to say, has been discouraging, as only thirty-two applications for the examination have been made during the year. This, however, does not represent, by any means, all the work done in relation to the hookworm disease. Dr. W. S. Rankin, of Wake Forest, in the early fall offered to give a month of his time to the Board without charge, other than his actual expenses, in making a personal investigation, proposing to visit with his microscope the physicians in a number of our eastern counties and make the diagnosis for them on the spot. Authority was

obtained by correspondence with the members of the Board to accept Dr. Rankin's offer. He began his investigation by a trip during Christmas week to Northampton and Edgecombe counties. The results were so meagre and discouraging, as will appear in his report, which he will read, that we agreed that it would not pay to continue the personal work, and the spring tour of three weeks was accordingly abandoned. He has, however, done other work on this line by correspondence and among the students of the college, as he will detail to you. The physical signs of uncinariasis are so striking and the diagnosis from the mere general appearance of a victim to it, taken together with his environment, is so easy, that I have no doubt the diagnosis has been made in many instances without resort to the microscope and the proper remedy administered.

From the facts in our possession it is certain that uncinariasis is very prevalent in our State, and that it is not limited to the sandy section, as Stiles suggests. It deserves and should receive the careful attention of all practitioners. With the lights before me I would say unhesitatingly that every case of pronounced anemia, especially in young persons living in the country, should be investigated with a special view to this very harmful intestinal parasite.

TUBERCULOSIS.

Tuberculosis continues our most fatal disease. Experience has demonstrated that much can be done for its prevention. We should therefore make an earnest effort to check its ravages as far as possible. I therefore bring the matter forward in order that it may be discussed in the conjoint session, so that we

may have the benefit of the wisdom that is said to appertain to a multitude of counsellors.

The question of the prevention of tuberculosis is theoretically easy but practically most difficult, very much more so in our southern country than elsewhere on account of the large number of negroes. The infectious principle being existent only in sputum and other discharges from tuberculosis cases and in the infected milk and meat of the lower animals, the thing to do, of course, is to destroy the sputum and prevent the sale and consumption of the tuberculous milk and meat. But *how* to accomplish this in actual practice to more than a most superficial extent is the question. The answer to this question is: By the thorough education of the public mind on the subject. So the practical problem is how to reach and influence the people, especially those having the disease and their immediate families who necessarily are in close and constant contact with them.

The first step in the solution of this problem is to locate the tuberculous patients. To accomplish this a few States and cities have resorted to legislation, requiring compulsory notification of tuberculosis as of other contagious diseases, so that the proper instructions may be given, inspections made and disinfection practised. This looks well on paper, and in large cities with thoroughly organized health and police departments and sufficient money to support them it is no doubt of much practical value. But in communities such as our State, the population of which is chiefly rural or resident in small cities, towns and villages without the full facilities for enforcement indicated, we cannot expect very much from this

means. Especially is this true of the colored people. Their temperament, training, and environment make the solution of the problem in their case, to all intents and purposes, hopeless—for many years to come at any rate. And it is among them the disease is most prevalent, in the proportion of nearly three to one of the whites. That we cannot expect much is the more apparent when we call to mind the fact—the most discouraging fact—that a very large percentage of our physicians, although required to do so by law, will not report the more actively contagious diseases, such as scarlet fever, diphtheria and even small-pox, although the last named disease is, we believe, generally reported, but not so much because the law requires it as because the doctor wants to get rid of it. In the present state of public sentiment the indisposition to report tuberculosis will be much greater. At the same time it is desirable to have this done if it can be brought about. We are glad to say that our own city of Raleigh has enacted stringent legislation on this line, and the results will be watched with much interest, as it is the first movement in the State for compulsory notification, although anti-spitting ordinances have been in force several years, first in Asheville and later in Raleigh.

The methods usually resorted to for the education of public sentiment are tuberculosis congresses, the organization of anti-tuberculosis societies, public addresses, newspaper articles, the distribution to the individual of literature bearing on the subject and the establishment of special sanatoria. And this crusade has evidently borne fruit, for the decrease in the death-rate from tuberculosis has been much more marked in the

decade 1891-1900 than in any similar period previously. It is interesting to note, however, that the death-rate had been steadily diminishing in our larger cities before Koch's discovery of the bacillus and the demonstration of its contagious character. This is attributable to the improvement in the condition of the masses, better housing, better food, shorter hours of labor, the bicycle, athletic out-door games and the open-air life which has come to be the vogue, thereby begetting greater resisting power. In these respects the advance has been much greater in the past decade than before and it is no doubt to no inconsiderable degree responsible for the decreased death-rate.

In the prevention of infection with the tubercle bacillus there are three principal objects to be sought: 1. The building up of greater resisting power in the individual; 2. The prevention as far as possible of the development of the bacilli; 3. The prevention of their distribution by their prompt destruction.

1. The dangers of the inspiration or ingestion of the bacilli are so great that it is a matter of doubt if any one living even a few years has not at one time or another taken them into his system, and yet only about one-ninth of the population, it is estimated, become fatally infected. This is due to the protective or resisting power inherent in every one to a greater or less extent. It is well established that this power to resist disease, to repel it entirely, or to overcome it, is greatest in those who are in vigorous health. And this state of vigorous health is to be attained and preserved by living in accordance with the principles of hygiene, special stress being laid upon the paramount importance of pure, fresh air in the greatest abundance and

at all times as near an out-door life as possible.

2. The prevention of the development of the bacilli is to be accomplished chiefly by an *early diagnosis*, when the disease is a pure tuberculosis and before the degenerative changes which constitute consumption have taken place. In the former the bacilli, being tied up in the unbroken tubercles, are not thrown off to any extent, while in the latter they are discharged in the sputum by the million. I would earnestly commend to your careful perusal a very able article, appearing originally in the *New York Medical Journal* and reprinted in our January BULLETIN, on the subject of "The Relation of Early Diagnosis and Treatment to the Prevention of Tuberculosis," by Dr. Pottenger, President of the Anti-tuberculosis League of Southern California. He estimates that from 75 to 95 per cent. of early cases with proper care should be cured, thereby preventing the development and distribution of the myriads upon myriads of bacilli from the same cases going on in the consumptive stage. Dr. Pottenger says that the expert in tuberculosis "should be able to determine the presence of the disease in the vast majority of cases before bacilli appear in the sputum by the clinical history and physical examination. If not by these," he goes on to add, "the tuberculin test can be used with confidence and safety." I beg to emphasize this last statement, for while I know that some object to the use of the tuberculin test in the human, claiming that it is sometimes harmful, the early diagnosis in the tuberculosis stage is of such overwhelming importance to both the patient and public, that inasmuch as it will enable the comparatively inexpert to make the diagnosis with certainty, the little risk,

if there be any, should, in my judgment, be taken in doubtful cases. In any event, there can be no excuse for failure to resort at once to the microscope in every suspicious case for the detection of the bacilli upon their first appearance in the sputum, for the examination will be made free of charge for any physician applying to the laboratory of the Board of Health.

3. The prevention of the distribution of the bacilli must be accomplished by the patient himself. He can do this by the invariable habit of expectorating only into spittoons partially filled with some disinfectant, or into the fire, when in the house, and by the use of a pocket spittoon, bits of cloth or paper napkins (never the handkerchief) that can be burned, when out of doors. In a word, he must never let his sputum get away from him except into a disinfectant or the fire—never turn it loose to dry and assume the form of dust, especially in the house.

Having thus outlined the problem very inadequately, but as fully as the limits of this report and your time permits, we now come to the all-important question as to how we can best solve it.

The most conspicuous movement at present is towards the establishment by the State of special sanatoria for the tuberculous. Experience has demonstrated their great success, not only in curing the disease in its incipient stage—in over 50 per cent.—but chiefly as educators of the people, for every patient returning to his home, thoroughly trained in the proper management of his case so as to prevent the re-infection of himself and the infection of others, is an educator for his neighborhood. But at present, and doubtless for some years to come, we cannot hope for an appropri-

tion by the State for this purpose. The other methods generally employed to educate the people and prevent the spread of disease by compulsory notification, distribution of literature, organization of societies, etc., have already been referred to, but it seems to me that the most effective method of reaching and attacking the very citadel of the enemy has never been sufficiently emphasized. This method I believe to be through the family physician. It is the family physician who first locates the case of tuberculosis; it is he who is sought for advice by the patient and his friends, no one can get so near to the problem as he, and no one can have such influence as he in securing the proper management of the case on the part of both the patient and family. No health official nor organization can compare with him in the practical accomplishment of this work, if he can be induced to do it. Even if all the cases of the disease could be located and the proper instructions for prevention furnished—a manifest impossibility without his aid—they would make but little impression unless re-inforced by his endorsement and earnest personal advice. He is the medium—and the only medium in the vast majority of cases—through whom the principles of preventive management can effectively reach the individual case. It would be superfluous to argue this matter further. It is self-evident that the solution of this great and difficult problem, the greatest health problem of this or any age, turns chiefly on the attitude of the attending physician. The practical question before us, then, is: how can we arouse his interest and secure his cordial co-operation in the work. It is this particular question that I wish to hear discussed, that I may be helped in

the performance of my official duty in the premises.

I would respectfully suggest that this body, composed of a very large proportion of the leading physicians of the State, put itself on record by adopting some such resolutions as the following:

WHEREAS, Tuberculosis, of all diseases the most fatal, being the cause of death in about one-ninth of all who die, is a contagious and therefore preventable disease, and

WHEREAS, Its prevention depends upon the early diagnosis, upon the strict observance of certain precautions in the relations between the patient and his associates, and upon a mode of life in accordance with the well-established principles of hygiene, and

WHEREAS, These matters come within the immediate jurisdiction of the attending physician, whose influence in securing their observance is far greater than all other influences combined: therefore be it

Resolved, That it is the sense of the Medical Society of the State of North Carolina and of the North Carolina Board of Health, in conjoint session assembled, that the spread of tuberculosis, the greatest scourge of mankind, can be most effectively prevented only with the active aid and cordial co-operation with the health authorities of the family physician.

Resolved, That not only every member of this body but every physician in the State is earnestly requested to use every effort, professional and personal, to promote this great work for humanity.

I would also suggest the propriety of adopting the following:

Resolved, That it is the sense of the State Board of Health and of the State Medical Society, in conjoint session as-

sémbled, that provision should be made in our hospitals for the insane and in the State's Prison, and in the county jails as far as practicable, for the separation of tuberculous cases from the other inmates uninfected with the disease.

(Both resolutions were adopted unanimously).

SMALL-POX.

As was anticipated in our last report, small-pox has continued with us to an increased extent. The total number of cases during our small-pox year—May 1 to May 1—is 5,370 as against 4,456 the year before. Of this number, 2,840 were white and 2,530 colored, with 35 and 34 deaths, respectively. It will be noted that for the first time the disease was more prevalent among the whites. The death-rate was the smallest in the

history of the recent outbreak, being 1.23 per cent. among the whites and 1.34 per cent. among the colored. We have experienced the same difficulties in the management that have confronted us all along, due chiefly to the extreme mildness of the disease, although they have been somewhat less than heretofore.

At the request of the authorities of the city of Durham, who were experiencing much opposition to vaccination, I visited that city and addressed the people on the subject, with good results following.

The general small-pox outlook seems to be the same it was a year ago. It will continue from year to year until all the people have been successfully vaccinated or had the disease.

The following is a report in detail for the past year:

REPORT OF SMALL-POX FROM MAY, 1903, TO MAY, 1904.

COUNTIES.	NUMBER OF CASES.			NUMBER OF DEATHS.		
	White.	Colored.	Total.	White.	Colored.	Total.
Alamance	325	19	344	2		2
Alleghany	7		7			
Anson	6	148	154			
Ashe	200	16	216	4	1	5
Bertie		4	4		1	1
Bladen	24	1	25	2		2
Buncombe	43	19	62		3	3
Burke	7	5	12			
Cabarrus	36	1	37			
Caswell		82	82		2	2
Catawba	4		4			
Chatham	4	3	7			
Cherokee	28		28			
Chowan		1	1			
Cleveland	19	13	32			
Columbus	50	150	200		1	1
Cumberland	7	11	18			
Davidson	137	253	390	12	13	25
Davie	43	149	192			
Duplin	7	16	23			
Durham	40	300	340			
Edgecombe		9	9		2	2
Forsyth	47	53	100			
Gaston	35	16	51	3		3
Greene	2	35	37		2	2
Granville	6	13	19	2		2
Guilford	94	7	101			
Harnett	30		30			
Haywood	1		1			
Henderson	44	7	51			
Iredell	21	10	31			
Jackson	50		50			
Johnston	29	4	33			
McDowell	6	7	13			
Macon	40	10	50			
Madison	577	12	589			
Mecklenburg	6	15	21			
Montgomery		52	52			
Moore		1	1			
New Hanover	25	7	32			
Pender	1	7	8			
Perquimans		34	34			
Person		13	13			
Pitt	18	10	28			
Polk	7	28	35			
Randolph	28	3	31			
Richmond	27	34	61		1	1
Robeson	300	700	1,000	2	3	5
Rockingham	11	28	39			
Rowan	22	6	28	3		3
Rutherford	75		75			
Sampson		9	9			
Scotland	20	72	92			
Stanly	54		54			
Surry	49	4	53			
Swain	5	1	6			
Union	1	15	16			
Vance	42	1	43	3		3
Wake	4	12	16		1	1
Warren		5	5		4	4
Wayne	5	60	65			
Wilkes	102	36	138	2		2
Wilson	12	3	15			
Yadkin	27		27			
Yancey	30		30			
Total (in 65 counties)	2,840	2,530	5,370	35	34	69
Death rate, per cent.				1.23	1.34	1.28

LABORATORY.

The following is the report of Dr. McCarthy, the Biologist, in detail of the work done for the Board of Health in the joint laboratory of the Department of Agriculture and the Board of Health, during the past year:

REPORT OF BIOLOGIST.

RALEIGH, May 5, 1904.

DR. RICHARD H. LEWIS, *Secretary,*
N. C. State Board of Health,
Raleigh, N. C.

DEAR SIR:—I herewith submit a detailed report of the work done in the laboratory of the Board of Health during the twelve months included in the period from May 1, 1903, to April 30, 1904.

Total number of analyses and determinations 522

(These include the following samples, to-wit):

Public water supplies, monthly analyses 226

Analyses of water for physicians and health officers of counties..... 136

Examinations of sputum for physicians 57

Examinations of throat exudates, diphtheritic 53

Examinations of blood for plasmodium malarie 18

Examinations of feces for hook-worm 32

Total 522

The official examinations of public water supplies, under the law passed by the last Legislature, was begun in May, 1903.

No work was done in the laboratory during June. The full number of analyses required of the water companies under the law was therefore 11. This

number was actually taken by only four companies, the others, by carelessness or other causes, falling below the requirements of the law, as shown by the annexed list:

<i>Water Companies.</i>	<i>No. of Analyses Taken.</i>
Asheville	7
Concord	2
Charlotte	10
Dunn	1
Durham	10
Fayetteville (municipal)	8
Fayetteville (old system)	0
Gastonia	9
Goldsboro	10
Greenboro	11
Henderson	8
Hendersonville	5
High Point	6
Lumberton	6
Monroe	8
New Bern	5
Raleigh	11
Reidsville	6
Rocky Mount	10
Roxboro	6
Salem	9
Sanford	6
Salisbury	10
Southern Pines	9
Statesville	7
Tarboro	7
Waynesville	6
Washington	7
Wadesboro	3
Wilson	11
Wilmington	11
Winston	10

It must be said in justice to a few of these water companies that they began business during the year and could not therefore take the full number of analyses. The companies included in this

latter category are Dunn, Hendersonville, Roxboro.

The law directs the Board of Health to make these analyses for a charge of \$5 each. The usual cost of biological analyses of water is \$10 each. When we began this work it was with the idea of making only the biological analyses in the laboratory of the Board of Health, the chemical analyses to be made, if possible, by the Department of Agriculture. But in fact the chemical work was not done except in a very irregular way. The Department of Agriculture is supported by a special tax levied upon the farmers of the State. It is supposed to devote its energies entirely to strictly agricultural work. What work the Department can do in other lines must depend upon the chemists being unengaged.

Water analyses, to be of much value, must be made regularly and systematically. It was therefore determined to do the chemical as well as the biological work in the laboratory of the Board of Health.

Soon after starting the chemical work we found that the larger part of the water companies were using too much alum in their filters and passing a part of this into the filtered water. The various companies were notified of this fact, and though there was at first some indignation expressed upon the imputation cast upon their waters, the companies soon improved their services and apparatus, so that the last or April series of analyses showed for the entire State but two supplies giving the reaction for alum, and both these for only very minute quantities. We are now fully justified in stating that no State or country anywhere has municipal water supplies superior to that of North Carolina—so far as regards freedom from pollution

and injurious chemical compounds. There are thirty public water companies in the State. The water of all is very soft, and, with a few exceptions, is free from organic matter. All of the supplies derived from deep wells, in number 5, contain much dissolved earthy matter, and a few approach the quality of mineral waters. The deep waters are much harder than the surface waters.

The quality and safety of the public or municipal water supplies of the State is enormously superior to the average quality of the well waters sent to the laboratory. So great is the difference that the Biologist, as the result of four years' work in this line in North Carolina, is disposed to say that no incorporated town having 1,000 inhabitants can afford to permit its citizens to be supplied by private wells of the ordinary shallow type. The danger of typhoid hangs like the sword of Damocles over every community getting water from shallow wells. This danger is minimized for communities having a common supply which is closely guarded and the quality kept up to the standard by monthly analyses such as our State law requires. It would therefore seem to be the duty of health officers and physicians to advise even small towns to abandon shallow private wells for a common public water supply.

As regards the samples of well water sent by physicians and county health superintendents, I am able to say that the average quality is superior to that received during the preceding year. There were fewer grossly polluted samples.

Of the fifty-seven samples of sputum received, about one-third were free from bacillus tuberculosis. The samples showing the bacillus came from different parts of the State, but chiefly from the central and piedmont regions.

Of diphtheritic exudates, fifty-three were received and all but two showed the bacillus. Nearly all samples of exudates were described by attending physicians as "tonsillitis" or "membranous croup." Determinations of diphtheritic exudates were given precedence over all other lines of work in the laboratory and the result is in all cases where the physician can be reached by telegraph so transmitted, usually within one hour after sample reaches the laboratory. We could handle more of this class of work.

In examinations of blood for the malaria parasite, our facilities are not yet appreciated by the medical profession, or else the type of malaria found in North Carolina is easily diagnosed clinically. Only eighteen samples came in and the larger part of these were free from the germ. Only the tertian parasite has been found.

Of feces we have received thirty-two samples and all but four contained the hookworm or its eggs. Most of the samples also showed large quantities of sand, indicating recent geophagism. The ages of the patients as given by physicians varied between six and sixty-one years. The larger part were under twenty-five years. The samples came from the following counties: Caldwell, Iredell, Granville, Johnston, New Hanover, Mecklenburg, Nash, Stokes and Wake.

During the past twelve months, as in the preceding period, a few applications were received for the Widal test for typhoid fever. At considerable trouble and the expenditure of time and materials, the Biologist stocked suitable cultures for this work at three different times in the two years, but the demand for this work proved too small to justify us in keeping up the cultures. The average demand is only about four per

year. For the Widal test the culture of bacillus typhosus must be virulent and not over four or five months at longest from the spleen of a person dead of typhoid. The culture must also be transferred from tube to tube at least once a week, thus entailing much labor and consumption of material. With so much other work pressing upon the laboratory, we could not afford for the small demand to keep up the typhoid culture as required, so at present we decline applications for the Widal test. The clinical alternative is usually between typhoid and malaria, and an examination of the blood by microscope will determine whether or not it is malaria.

A part of the Biologist's time is given to the work of the State Department of Agriculture. The work of the Board of Health alone is more than enough to occupy the entire time of one man. Therefore until such time as the Legislature sees fit to provide for the entire support of the laboratory no further extension of the work is possible.

Respectfully submitted,

GERALD MCCARTHY, D.Sc.,

Biologist.

It will be observed that many of the public water supplies have been quite derelict in the matter of monthly analyses. The Act to protect water supplies requires every company selling water to the public to have an analysis made every month by the Board of Health, or in such laboratory as it may select, and yet in a total of 334 analyses required only 226 sent samples. I have tried faithfully to induce them by gentle means to send the samples regularly and promptly. My last letter has borne fruit, but there are some still that neglect this duty. While the law provides a penalty for failure to have the analyses

made it is manifestly undesirable to resort to the courts. Public opinion is the best lever to employ, and if the physicians living in cities and towns having public supplies would interest themselves in the matter the companies would be more apt to respond. It is of great importance that they should, not only as a guarantee to consumers of the purity of the water sold them, but also as a means of support to the laboratory. Thanks to an enlightened, broad-minded Board of Agriculture and a Commissioner cordially in sympathy with this work for the people, we have been enabled to do the very creditable amount of work for the public health shown in the report, but times change and men change with them, and the support of the laboratory is extremely precarious. It should be sustained by a direct appropriation by the State for the purpose and it is to be hoped that it may be made by the next Legislature.

While Dr. McCarthy, having no assistance, could hardly do more work than he has done, still it is discouraging to note how comparatively few of our physicians avail themselves of the privileges offered free of cost beyond a few cents of postage. The number, however, is growing and will no doubt increase more and more as time passes.

In conclusion, I appeal to the members of our noble profession to lend their interested support in this great work in which we are engaged. While some are disposed to sneer, and while it must be admitted that the spirit of commercialism which pervades all callings at the present time has not left us untouched, it still remains true that, excepting, perhaps, the sacred ministry, there is no body of men whose hearts are so open to the cry of distress or whose minds and hands are so

ready to administer to its relief without pecuniary reward as the physicians of our country. It is a noble profession, and on the principle of *noblesse oblige* it is the duty of every physician, and should be his pleasure, not only to cure disease and suffering but also to aid in their prevention.

Microbes and the Milk Supply.

BY GERALD MCCARTHY, D.Sc., BIOLOGIST.

Milk is the first, most perfect and most generally used of all human food-stuffs. In its fresh state, or as butter, cheese or fermented drink, milk occupies the most important place in the dietaries of all civilized nations. But milk is also an almost ideal food for bacteria—these minute but formidable organisms which modern science has shown to be the chief cause of epidemics and premature deaths among mankind. Not all species of bacteria are noxious—many are among our most useful servants, but like other servants, these, when they get out of their proper sphere, are liable to take on the characters of very obnoxious masters. The milk used in its natural or fresh condition, more especially during hot weather, cannot be too pure or too free from bacteria. Bad milk is the chief cause of infant mortality in summer.

The "fresh" milk delivered to consumers in cities is usually from 24 to 48 hours old, and is often as rich in putrefactive bacteria as the sewage which flows beneath the streets in the same cities. More than this, the bacteria in the sewage and those in the milk are apt to be largely the same species. The following table shows the numbers of bacteria which have been found in the milk delivered to consumers in the cities

named. The measure used, cubic centimeter, is equivalent to 16 minims or drops from an ordinary medicine dropper.

Boston, Mass.	4,577,000
Middletown, Conn.	8,452,000
Madison, Wis.	3,674,000
Naples, Italy	3,600,000
Wurzburg, Germany	7,330,000
Odessa, Russia	29,850,000
New York, N. Y.	10,000,000

The average bacterial contents of fresh milk immediately after drawing, as found in the milk pails of careful dairymen, is about 10,000 per cubic centimeter. Under the average farm conditions, the number of bacteria so found is at least ten times as great. Bacteria increase in numbers only very slowly while the temperature of the surrounding fluid is below 40°F. Under the ordinary temperature of the barn or milk room, most bacteria commonly found in milk double their numbers by the simple process of dividing their single-celled bodies every half-hour.

It is therefore of the utmost importance to the keeping qualities of the milk and to the health of those who consume the milk that the conditions surrounding the cow and milker at the time of milking should be such as to insure the lowest possible bacterial contamination and further, it is very important that the milk, as soon as drawn, be cooled to below 40°F. and held there until consumed.

The bacteria ordinarily found in milk are the same species found in excrement of cattle. The species vary according to the kind of food given the cows. The common bacteria are not particularly injurious, since they are normally found in the human intestines as well in those of cattle, but when present in great numbers, and more especially when the milk is more than twelve hours old, these bac-

teria may excrete toxins which are more or less injurious. These toxins, the product of milk bacteria, are without doubt one of the chief causes of intestinal diseases in children during hot weather. Many parents already recognize the connection between milk and diarrhœal diseases of children and seek to avoid the trouble by using instead of fresh milk condensed milk and the "infants' foods" sold by druggists. But such substitution is rarely effective. Children do not thrive on condensed milk, and it is well known that those children fed upon the much-advertised "foods" are apt to develop rickets and to succumb suddenly under the accidental strains to which all children are more or less exposed. Next to mothers' milk there is no food so well adapted for feeding children of tender age as fresh cow's milk having a low bacterial content. There is in all food-stuffs an elusive but very important principle called "life." This principle is absent in canned and preserved foods of all kinds. Therefore no one thrives when fed largely or exclusively upon such "dead" foods.

The New York Board of Health last summer made a very extensive study of the effect of feeding various grades of milk to the children of the tenement districts of that city. The results as reported by Dr. William H. Park in the *Medical News* for December, 1903, were substantially as follows:

1. The raw milk used by different families contained per cubic centimeter from 10,000 to 100,000,000 bacteria. Milk heated to 170°F. usually contained when used less than 500 bacteria per cc. After boiling milk contained less than 5 bacteria per cc. Boiling milk usually destroys or attenuates the toxins already present in the milk. But boiling also

injures the digestibility of milk. Heating to 140°F., unless continued for several hours, does not destroy such toxins.

2. During cold weather no apparent differences in health of children were traceable to the different qualities of milk.

3. During hot weather the kind of milk fed had a most important and easily detected influence on the health of children under observation. The worst results were obtained from condensed milk and the cheap milk of grocery stores.

4. One million bacteria per cubic centimeter of milk was found to be the limit of safety. When milk containing more than this was fed raw evil results followed promptly. When such milk was boiled before using not much injury followed.

5. Heating to 170°F. for a short time seemed to destroy the toxins in milk unless the milk was very old and contained an excessively large bacterial content.

6. Milk "pasteurized" by heating to 140°F., or any degree short of boiling, and then kept under ordinary household conditions for thirty-six hours contained over 100,000,000 bacteria per cc., and was very deleterious.

7. Good bottle feeding of infants was found to be nearly as satisfactory as breast feeding. But good bottle feeding is rarely practiced. The feeding of fruit or ordinary table foods to children under two years was found to be one of the principal factors in the mortality of tenement-house children.

Most druggists sell, or can procure, household milk-pasteurizing outfits suitable for preparing milk for children's use. Such outfits cost about \$3. Much cheaper and equally effective apparatus can be improvised in most households. Ordinary four-ounce or six-ounce, wide-

mouthed bottles with glass stoppers can be had from most druggists at about fifty cents per dozen. But in the absence of such, common glass jelly tumblers or small fruit jars may be used. Corks should be used to close such vessels. Rubber or glass stoppers kept scrupulously clean or metal caps may be used or a clean sheet of glass may be laid down over the mouths of the vessels. The best results will be obtained by heating the milk to 140°F. for one hour, followed by heating to 185°F. for two minutes. Where the milk is known to be reasonably fresh and where no pathogenic germs are suspected, the higher temperature is not necessary. After heating milk cool at once and keep as near 40°F. as possible until milk is consumed. Never keep the milk longer than twenty-four hours.

Each vessel should contain only as much milk as will be consumed at one feeding. Any residue should be thrown away.

The best way to heat milk is to place the vessels containing the milk in a basin of cold water, with the water at about the same level as the milk, and heat to the required temperature. The period of heating is to be reckoned from the time the temperature reaches the desired point. In this matter guess work will not do; a good dairy thermometer costing about fifty cents is necessary.

Besides the ordinary saprophytic bacteria found in milk, we may look for the germs of tuberculosis, typhoid, diphtheria and possibly scarlet fever. The most frequent and important pathogenic bacterium liable to be disseminated in milk is *bacillus tuberculosis*. A recent investigation into the milk supplies of English cities has shown that about 25 per cent of all the samples collected contained the germ of tuberculosis. The tu-

bereular contamination of milk supplied to American cities is very much less than this, but it is still known to exist. The tuberculosis germ has also been frequently found in butter, and in cheese less than four months old. There can be no reasonable doubt that tuberculosis is more frequently disseminated in contaminated milk, butter and cheese than has been commonly supposed.

Probably very few persons could be induced to eat the flesh of an animal killed on account of infection by tuberculosis. Yet such flesh is perfectly safe to eat if thoroughly cooked. The cooking destroys both the germs and their toxins.

There is urgent need in North Carolina, as well as other States, of efficient hygienic oversight of dairy farms, to the end that tuberculosis-infected cattle may be excluded from herds supplying the public with milk, and also that all persons having consumption may be excluded from handling the milk or utensils used by dairymen. Until we secure such oversight and control of the milk supply, we may expect tuberculosis to carry off each year, as it does at present, more human lives than war, flood and famine combined.

Review of Diseases for May, 1904.

SEVENTY-SIX COUNTIES REPORTING.

Ninety-six counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases the Superintendent has as a rule to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of May the following diseases have been reported from the counties named:

MEASLES.—Alleghany, several cases; Ashe, 12; Burke, many, Caldwell, many; Cherokee, 15; Craven, 3; Davidson, many; Durham, many; Edgecombe, epidemic; Forsyth; Granville, 4; Guilford, 2; Henderson, several; Hertford, 1; McDowell, 6; Macon, several; Martin, 10; Mecklenburg; Mitchell; New Hanover, 30; Person, several; Pitt, 3; Polk, a few; Randolph, in the western part; Richmond, a few; Robeson, a few; Rockingham; Rowan, 30; Transylvania, a few; Wake, 5; Watauga, 15 to 20; Wilson, many—32 counties.

WHOOPING-COUGH.—Brunswick, 20; Cherokee, 40; Clay, 25; Craven, 2; Durham; Edgecombe, a few; Forsyth; Haywood, in all parts; Hertford, a few; Iredell, 2; Macon, several; Martin, many; Mecklenburg; Pamlico; Pitt, 6; Randolph, a few; Sampson; Swain, in all parts; Union, 10; Wake, 6—20 counties.

SCARLET FEVER.—Durham, 5; Forsyth, 3; Gaston, 1; New Hanover, 1; Rockingham, a few—5 counties.

DIPHTHERIA.—Chowan, 1; Craven, 1; Cumberland, 1; Edgecombe, 1; Gaston, 1; Haywood, 5, no physician attending, 3 deaths; Iredell, 4; Mecklenburg—8 counties.

TYPHOID FEVER.—Ashe, 3; Brunswick, 1; Caldwell, a few; Cleveland, a few; Craven, 2; Edgecombe, 2; Forsyth, many; Guilford, 1; Madison, 3; New Hanover, 4; Pamlico, 1; Pender, a few; Pitt, 3; Robeson, a few; Rockingham,

very few; Rowan, 6; Scotland, 2; Union, 20; Warren, 2; Washington, 1—20 counties.

MALARIAL FEVER.—Brunswick: Davidson: Duplin: Gates, 10; Hertford, several; Martin, in all parts: Pamlico: Pitt: Vance, in all parts—9 counties.

MALARIAL FEVER, PERNICIOUS.—Brunswick, 1; Davidson, 1; Pamlico, 1—3 counties.

BOWEL DISEASES.—Anson, several; Brunswick; Burke; Catawba; Cleveland; Cumberland; Currituck; Duplin; Gates, 21; Harnett; Hertford; Martin, in all parts; Mitchell; Northampton; Pender; Richmond; Robeson; Rowan; Sampson; Stanly, in all parts; Washington, in all parts—21 counties.

IMPETIGO.—Burke.

INFLUENZA.—Alamance, in all parts; Caldwell, in all parts; Cumberland; Gates; Lincoln; Madison; Randolph, in all parts; Transylvania, in all parts—8 counties.

PNEUMONIA.—Caswell; Gates, 3; Hertford, very few; McDowell, in all parts; Martin, in all parts; Transylvania, several—6 counties.

MUMPS.—Alleghany; Caswell; Clay; New Hanover; Randolph, in western part; Scotland—6 counties.

SMALL-POX.—Alamance, 2; Alleghany, 7; Anson, 3; Ashe, 60; Buncombe, 21; Catawba, 4; Chatham, 14; Cleveland, 3; Davidson, 2; Duplin, 1; Durham, disappearing, only one case in the city of Durham, June 2, the date of the report; Forsyth, 16; Gaston, 12; Guilford, 22, all well but 3 at date of report, June 6, and no danger of spread; Henderson, 1; Johnston, 2; Mecklenburg, 1; Mitchell, 1; Nash, 1; New Hanover, 1; Person, 6; Pitt, 2; Richmond, 4; Rutherford, 2; Stanly, 2; Swain, 8; Washington, 1, one suspect under guard, all exposed

persons vaccinated and all infected articles burned; Wilkes, 8, now about free of it, two cases under guard, June 9—28 counties.

CHOLERA IN CHICKENS.—Pamlico.

CHOLERA IN PIGS.—Clay; Sampson.

DISTEMPER IN HORSES.—Ashe.

No disease reported from Alexander, Bertie, Camden, Carteret, Davie, Hyde and Pasquotank.

No reports received from Beaufort, Cabarrus, Columbus, Dare, Franklin, Graham, Greene, Halifax, Jackson, Jones, Lenoir, Moore, Onslow, Orange, Perquimans, Stokes, Surry, Wayne and Yadkin.

Summary of Mortuary Reports for May, 1904.

(TWENTY-SIX TOWNS.)

	White.	Col'd.	Total.
Aggregate population.....	91,350	63,050	154,400
Aggregate deaths..	112	158	270
Representing temporary annual death-rate per 1,000.....	14.7	30.1	21.0
<i>Causes of Death.</i>			
Typhoid fever.....	2	0	2
scarlet fever.....	1	0	1
Malarial fever.....	0	2	2
Diphtheria..	2	0	2
Whooping-cough..	2	1	3
Measles.....	0	1	1
Pneumonia.....	8	13	21
Consumption.....	14	34	48
Brain diseases.....	12	9	21
Heart diseases.....	12	12	24
Neurotic diseases..	2	6	8
Diarrhœal diseases	21	16	37
All other diseases..	34	57	91
Accident.....	1	5	6
Suicide.....	1	1	2
Violence.....	0	1	1
	112	158	270
Deaths under five years.....	34	51	85
Still-born.....	5	18	23

Mortuary Report for May, 1904.

TOWNS AND REPORTERS	RACES.	POPULA- TION.		TEMPORARY ANNUAL DEATH RATE PER 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrheal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	Total. By Races.	By Towns.	Deaths under five years.	Still born.
		By Races.	Total.	By Races.	Total.																				
Burlington	W. 3,000	3,500	0.0	0.0								1						1	1		3	3	1		
Dr. C. A. Anderson.	C. 500		0.0																		0	0			
Charlotte	W. 11,000	18,200	8.7	15.8									1	1	1	4	1	1			8	24	2	1	
Dr. F. O. Hawley.	C. 7,200		26.7									1	1		3	6	1	1			16	6	2		
Durham	W. 8,000	13,000	19.5	19.4								2	1				4				7	21	1	1	
Dr. N. M. Johnson.	C. 5,000		33.6									2	3	2			7				14	4	4		
Edenton	W. 1,200	3,000	10.0	4.0													1				1	1	1		
Dr. T. J. Hoskins.	C. 1,800		0.0																		0	1			
Elizabeth City	W. 5,000	8,000	19.2	25.5									2	2	1	2	1				8	17	1		
Dr. I. Fearing.	C. 3,000		36.0										2	3			3	1			9	1			
Fayetteville	W. 2,500	4,800	19.2	30.0				1						2	1						4	12	2		
Dr. A. S. Rose.	C. 2,300		41.7									1		1		2	4				8	5	2		
Goldsboro	W. 3,500	6,100	13.7	19.7								1					3				4	10	1		
Robt. A. Creech, H. O.	C. 2,600		27.7									1	2				2	1			6	3	1		
Greensboro	W. 6,100	10,100	9.8	19.0									1				3	1			5	16	1	1	
Jno. S. Michaux, C. C.	C. 4,000		33.0									6	2		1	2					11	1	1		
Henderson	W. 2,100	3,800	0.0	12.6																	0	4			
Dr. John H. Tucker.	C. 1,700		28.2					1									3				4				
Laurinburg	W. 900	1,500	13.3	8.0										1							1	1			
Dr. G. D. Everington.	C. 600		0.0																		0				
Lexington	W. 800	1,300	15.0	9.2													1				1	1			
J. H. Weyer, Mayor.	C. 500		0.0																		0				
Marion	W. 800	1,200	15.0	10.0													1				1	1			
Dr. B. L. Ashworth.	C. 400		0.0																		0				
Monroe	W. 1,850	2,450	6.5	9.8										1							1	2			
Dr. Jno. M. Blair.	C. 600		20.0										1								1				
Oxford	W. 1,200	2,450	20.0	14.7									1				1				2	3			
Dr. S. D. Booth.	C. 1,250		9.6																		1				
Raleigh	W. 8,000	13,800	21.0	27.8								2	1	5		2	4				14	32	6		
T. P. Sale, Clerk B. H.	C. 5,800		35.5									1	7		2	1	2	4	1		18	3	4		
Reidsville	W. 2,900	4,200	8.3	11.4								1					1				2	4	1		
R. S. Montgomery, Clk.	C. 1,300		18.5									1					1				2		1		
Rocky Mount	W. 1,600	3,100	7.5	7.7										1							1	2			
Dr. J. T. Shubrick, H. O.	C. 1,500		8.0									1									1				
Salem	W. 3,300	3,650	32.7	29.6								1	3				5				9	9	1		
S. E. Butler, Supt. H.	C. 350		0.0																		0				
Salisbury	W. 3,900	6,400	30.8	30.0		1						1	2		1	5					10	16			
Dr. H. T. Trantham.	C. 2,500		28.8										2		1		2	1			6		1		
Southport	W. 900	1,400	13.3	8.6				1													1	1	1		
Dr. D. I. Watson.	C. 500		0.0																		0				
Tarboro	W. 2,000	2,500	12.0	19.2										1		1					2	4	1		
Dr. Wm. J. Thigpen.	C. 500		48.0									1	1								2	1	2		
Wadesboro	W. 1,000	1,700	0.0	7.1																	0	1			
Dr. J. H. Bennett.	C. 700		17.1									1									1				
Waynesville	W. 1,600	2,000	0.0	0.0																	0	0			
Dr. Thos. Stringfield.	C. 400		0.0																		0				
Weldon	W. 700	1,450	0.0	6.0																	0				
J. T. Gooch, Mayor.	C. 750		16.0														1				1	1	1		
Wilmington	W. 11,000	21,000	17.4	29.7		1						1	3		2	1	5	3			16	52	7		
Dr. Chas. T. Harper.	C. 10,000		43.2									1	3	3		4	1	5	18		1	36	13		
Wilson	W. 3,500	6,800	13.7	15.9										1	1		1	1			4	9	3		
Dr. W. S. Anderson.	C. 3,300		18.2					2									2				5		4		
Winston	W. 6,000	10,500	20.0	29.7		1				2		1	2				2	2			10	26	7		
Dr. J. L. Hanes.	C. 4,500		42.7									4	6				1	5			16	9			

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

County Superintendents of Health.

Alamance	Dr. T. S. Faucette.	Jones.....	Dr. N. G. Shaw.
Alexander	Dr. C. J. Carson.	Lenoir	Dr. C. L. Pridgen.
Alleghany	Dr. Robt. Thompson.	Lincoln	Dr. John W. Saine.
Anson	Dr. J. H. Bennett.	McDowell	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon	Dr. F. L. Siler.
Beaufort	Dr. D. T. Tayloe.	Madison	Dr. W. J. Weaver.
Bertie	Dr. H. V. Dunstan.	Martin.....	Dr. W. H. Harrell.
Bladen.....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin.
Brunswick	Dr. J. A. McNeill.	Mitchell.	Dr. J. Warren Bailey.
Buncombe	Dr. D. E. Sevier.	Montgomery	Dr. M. P. Blair.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod.
Cabarrus.....	Dr. R. S. Young.	Nash	Dr. J. P. Battle.
Caldwell	Dr. W. P. Ivey.	New Hanover.....	Dr. W. D. McMillan.
Camden.....	Dr. J. L. Lister.	Northampton.....	Dr. H. W. Lewis.
Carteret	Dr. F. M. Clarke.	Onslow.....	Dr. E. L. Cox.
Caswell	Dr. S. A. Malloy.	Orange.....	Dr. D. C. Parris.
Catawba	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. T. A. Kirkman.	Pasquotank	Dr. J. B. Griggs.
Cherokee.....	Dr. B. Meroney.	Pender.....	Dr. R. J. Williams.
Chowan.....	Dr. T. J. Hoskins.	Perquimans.....	Dr. C. C. Winslow.
Clay	Dr. P. B. Killian.	Person	Dr. J. A. Wise.
Cleveland	Dr. B. H. Palmer.	Pitt.....	Dr. Zeno Brown.
Columbus.....	Dr. I. Jackson.	Polk	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph	Dr. W. J. Moore.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. F. J. Garrett.
Currituck	Dr. H. M. Shaw.	Robeson	Dr. H. T. Pope.
Dare	Dr. W. B. Fearing.	Rockingham	Dr. Sam Ellington.
Davidson.....	Dr. Joel Hill.	Rowan.....	Dr. W. L. Crump.
Davie	Dr. M. D. Kimbrough.	Rutherford.....	Dr. T. B. Twitty.
Duplin	Dr. A. J. Jones.	Sampson	Dr. John A. Stevens.
Durham	Dr. N. M. Johnson.	Scotland	Dr. A. W. Hamer.
Edgecombe	Dr. W. J. Thigpen.	Stanly.....	Dr. V. A. Whitley.
Forsyth.....	Dr. W. O. Spencer.	Stokes	Dr. W. V. McCaless.
Franklin	Dr. R. F. Yarborough.	Surry	Dr. John R. Woltz.
Gaston.....	Dr. H. F. Glenn.	Swain.....	Dr. A. M. Bennet.
Gates.....	Dr. W. O. P. Lee.	Transylvania	Dr. C. W. Hunt.
Graham.....	Dr. V. J. Brown.	Tyrrell.....	
Granville	Dr. S. D. Booth.	Union	Dr. John M. Blair.
Greene.....	Dr. W. B. Murphy, Jr.	Vance.....	Dr. H. H. Bass.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. J. L. McCullers.
Halifax	Dr. I. E. Green.	Warren.....	Dr. M. P. Perry.
Harnett.....	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. F. Abel.	Watauga.....	Dr. C. W. Phipps.
Henderson	Dr. J. G. Waldrop.	Wayne.....	Dr. Williams Spicer.
Hertford	Dr. C. F. Griffin.	Wilkes.....	Dr. W. P. Horton.
Hyde	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson.
Iredell	Dr. M. R. Adams.	Yadkin	Dr. T. R. Harding.
Jackson.....	Dr. R. L. Davis.	Yancey	Dr. J. L. Ray.
Johnston	Dr. Thel Hooks.		

[You are asked to fill out and mail one of these forms to the Superintendent of Health of your county on or before the third of each month, that he may use it in making his report to the Secretary of the State Board.]

Have any of the following diseases occurred in your practice during the month just closed. If so, state number of cases.

Whooping-cough ----- Typhoid Fever -----

Measles ----- Typhus Fever -----

Diphtheria ----- Yellow Fever -----

Scarlet Fever ----- Cholera -----

Pernicious Malarial Fever ----- Smallpox -----

Hemorrhagic Malarial Fever ----- Cerebro-spinal Meningitis -----

What have been the prevailing diseases in your practice?

Has any epidemic occurred among domestic animals? If so, what?

What is the sanitary condition of your section, public and private?

General Remarks: -----

----- M. D.

BULLETIN

OF THE

North Carolina Board of Health.

Published Monthly at the Office of the Secretary of the Board, Raleigh, N. C.

GEO. G. THOMAS, M. D., *Pres.*, Wilmington.

S. WESTRAY BATTLE, M. D., Asheville.

HENRY W. LEWIS, M. D., Jackson.

J. L. NICHOLSON, M. D., Richlands.

W. P. IVEY, M. D., Lenoir.

FRANCIS DUFFY, M. D., New Bern.

W. H. WHITEHEAD, M. D., Rocky Mt.

J. L. LUDLOW, C. E., Winston.

RICHARD H. LEWIS, M. D., *Secretary and Treasurer*, Raleigh.

VOL. XIX.

JULY, 1904.

No. 4.

Compulsory Notification of Tuberculosis.

In our annual report, printed in the last issue of the BULLETIN, we referred to a certain ordinance adopted by the Board of Aldermen of Raleigh, on May 6th last, requiring, under heavy penalty, a report by physicians of all cases of tuberculosis coming under their care to the city Board of Health. For lack of space we could not print it then, but now take pleasure in doing so as showing the progressive spirit of our capital city. We should add that this action is largely attributable to the energy and persistence of Professor W. A. Withers, who takes a deep personal interest in the subject. If enforced, this ordinance ought to be helpful, especially in the management of the disease among the very poor, and we hope the city authorities will carry it out. We shall watch its practical working with much interest.

ORDINANCE REQUIRING PHYSICIANS TO REPORT CASES OF CONSUMPTION OCCURRING IN THEIR PRACTICE.

(Adopted May 6, 1904).

Be it ordained by the Board of

Aldermen of the City of Raleigh:

That chapter 22 of the city ordinances be amended by adding thereto the following sections:

Section 51. The Board of Health of the city of Raleigh shall prepare a pamphlet setting forth the nature of consumption, typhoid and scarlet fever, diphtheria and small-pox, and the precautions to be taken for preventing their spread. The superintendent of the Board of Health shall cause the pamphlet to be printed in suitable form for distribution, at the expense of the city, and deposit same with the clerk of the Board of Health of the city.

Section 52. It shall be the duty of the attending physician to give immediate notice to the clerk of the Board of

Health of any case of tuberculosis or consumption that shall come under the professional care of such physician, furnishing with the notice information as to the sex, color and location of the residence of said patient, and the name of the owner of said premises; and any physician who shall fail to report as aforesaid any cases of such disease that come under his professional care as aforesaid shall be punished, on conviction thereof in the Mayor's court, by a fine of twenty dollars or imprisonment for thirty days.

Section 53. It shall be the duty of the clerk of the Board of Health, upon receiving notification from a physician of a person afflicted with consumption, to at once supply to such person, or to the husband or wife of such person, or to the parent of such person, a copy of the pamphlet prepared by the Board of Health in regard to that disease.

Section 54. It shall be the duty of the clerk of the Board of Health, upon receiving notification from a physician of a person who has tuberculosis or consumption, to notify at once the owner of the premises of the fact, giving the name of the person so afflicted, and calling attention at the same time to section 55, chapter 22 of the City Ordinances.

Section 55. It shall be the duty of the owner or the agent of such owner of the premises upon which a tuberculous or consumptive person has resided to give immediate notice to the clerk of the Board of Health upon the vacation of the premises by said person from death or other cause, and any property owner or agent of such owner who fails or neglects to make such report shall, upon conviction in the Mayor's court, be fined twenty dollars.

Section 56. It shall be the duty of the City Sanitary Officer, upon being informed of the vacation of premises by a tuberculous or consumptive person, to *at once* see that every room of the residence is thoroughly disinfected and fumigated by such tuberculous or consumptive person or his family as will prevent the further spread of the disease. If such tuberculous or consumptive person or his family shall be unable financially or otherwise to comply with the provisions of this section, then it shall be done by the Sanitary Inspector, the city paying the expense of the same.

Section 57. It shall be the duty of the clerk of the Board of Health to record in the book, at once, kept by him for the record of contagious diseases, upon receiving information, the name, sex, color and place of residence of every tuberculous or consumptive person reported to him by a physician, together with the name of the owner of the premises. It shall also be his duty to record in the same manner and in the same book, the date upon which every house reported as containing a tuberculous or consumptive person was vacated by said person, and the date upon which said house was disinfected under the direction of said Sanitary Officer.

Section 58. It shall be the duty of the city Sanitary Officer to supply at once and afterwards from time to time to such tuberculous or consumptive persons as are indigent the necessary disinfectants and spittoons prescribed by the Board of Health, during the continuation of the disease.

Section 59. It shall be the duty of the city Sanitary Officer to visit such tuberculous or consumptive persons as are indigent, whenever he shall be so directed

by the City Physician, for the purpose of furnishing disinfectants, showing the proper methods for using such disinfectants, and explaining the same not only to the other members of the household but to the person afflicted.

Lockjaw.

While fortunately not very frequent in our country, tetanus is so fatal and so horrible in its manifestations that it behooves us to do all we can to prevent it. We therefore are glad to print below an interesting article on its prophylaxis. We doubt, with all our advances in such matters, if any improvement has been made on the old domestic custom of washing the wound and filling it with oil of turpentine. It is a method which would naturally appeal to us Tar-beels, and, while simple and homely, it is none the less solid and as reliable, we believe, as any other disinfectant likely to be used. The following is the article:

THE PROPHYLAXIS OF TETANUS.

S. C. STANTON, M.D., CHICAGO.

Before taking up the consideration of the prophylaxis of tetanus, it may be well briefly to discuss the disease and to give some statistics regarding its prevalence and mortality.

ETIOLOGY.

Tetanus is defined as an acute, specific infective disease, characterized by involuntary tonic muscular spasms, tending to become generalized and with paroxysmal exacerbations from time to time. The causative micro-organism is the tetanus bacillus, which, having gained en-

trance to the body, elaborates a virulent toxin, and this, acting on the motor cells of the spinal cord or medulla, increases their irritability and induces the spasm.

The tetanus bacilli or their spores are most commonly present in garden soil, street sweepings, stable manure, and the feces of herbivorous animals.

In almost all cases the virus can be shown to have entered the body through a wound, and deep punctured wounds are the most likely to be followed by tetanus. The disease is more frequent in negroes than in white persons, and is more prevalent in the tropics than in the temperate zone.

PREVALENCE.

The distribution of tetanus in the various States, as shown by the United States census for 1900, is interesting. During that year 1,664 deaths were recorded; 185 of these were in Louisiana; 147 each in New York and Pennsylvania; 125 in Texas; 90 in Illinois; 76 in Ohio; 74 in Florida; 61 in Alabama; 56 each in Indiana and New Jersey; 51 in Virginia; 48 in Maryland; 46 in Georgia; 43 in Missouri, and 41 in Tennessee. Louisiana, with a census population of 1,381,625, heads the list with 185 deaths.

The prevalence of the disease by months has been investigated by Dr. H. Gideon Wells, Chicago, who has found that the curve of deaths takes its upward start in May, reaching its maximum in July, and thence declining to October. These figures are for 1900. In 1901 there were relatively few deaths from tetanus in July, when the usual augmentation occurs. In 1902 the curve again reached its summit in July, but with a mortality of only 15 as compared with 26 in 1900.

The deaths from tetanus in Greater

New York reached a maximum of 21 in July, 1899, the greatest totals in any other month of the year being 5 in June and 4 in September, the total deaths for the year being 38. In 1900, 13 deaths occurred during July and 5 in June, out of a total of 33 for the year. In 1901 there were only 5 deaths in July, and this number was exceeded in April and October, in each of which months 6 deaths occurred.

The statistics of the census of 1900 show that 222 deaths from traumatic tetanus occurred between the ages of 10 and 14; 149 between the ages of 5 and 9; 117 between the ages of 5 and 19; 84 between the ages of 20 and 24; 79 between the ages of 25 and 29; and 77 between the ages of 30 and 34. As far as these statistics go, it appears that the greatest mortality from this disease occurs before the age of 19, and that the mortality below the age of 14 is about three times as great as that between the ages of 15 and 19.

The Journal of the American Medical Association has taken up exhaustively in its August 9 (1903) issue a subject which must interest the American physician deeply—namely, the tetanus following the Fourth of July celebration.

Its statistics show an appalling and unnecessary slaughter of the innocents. The total number of deaths due to Fourth of July injuries is 466, of which 406 were due to tetanus. Pennsylvania heads the list with 86, and is followed by Ohio with 77; Illinois with 59; New York with 41; Michigan with 31; Missouri with 29; Massachusetts with 17; Minnesota with 15; Iowa with 16; Indiana with 14; Kansas with 13, and New Jersey and Wisconsin with 10 each. With but few exceptions, the victims were small boys.

The cause of Fourth of July tetanus has been supposed to be the presence of tetanus bacilli in blank cartridges, but this cannot be considered as proved, as only one of the several investigators detected tetanus bacilli in blank cartridges or wads. The bacillus has, however, repeatedly been found in the dust of the streets where tetanus has been prevalent.

As a result of the investigations, we may conclude that there is no convincing evidence that blank cartridges contain tetanus bacilli, except as a rare contamination; there is, on the other hand, ample evidence that tetanus bacilli are present in the street dust and on the persons and clothing of the injured, and the most reasonable conclusion is that of La Garde, Wells and other investigators that the organisms are carried into the wounds from the surface at the time of the accident.

PROPHYLAXIS.

As the greatest mortality during the year is observed about the time of the National celebration of the Fourth of July, it naturally follows that in the prophylaxis of tetanus this important factor should not be omitted.

The prophylaxis of tetanus may be considered under five heads:

1. The enforcement of existing laws regarding the sale of toy pistols and other dangerous toys. In most cities and in some States there are already laws, supposedly in effect, which prohibit the use of fire-arms and the setting off of fire-works. At and around the time of the Fourth of July, however, these laws are almost invariably forgotten, or at least their enforcement is criminally neglected. A striking example of the results of enforcement of

ordinances regarding the use of explosives is furnished in Washington, and this city does not show an increased mortality from tetanus in July.

2. The enactment of laws by Congress, State Legislatures and municipalities prohibiting the manufacture and sale of toy pistols, blank cartridges, dynamite canes and caps, cannon crackers, etc. Spurred on by the terrible aggregate of deaths which followed the Fourth of July this year, several medical societies have already recommended the adoption of ordinances which shall avert the possibility of a repetition of this heavy total in after years. Several city councils have also drafted and adopted ordinances on these lines, but without enforcement such ordinances are of no effect, and the slaughter will be continued.

3. The open treatment of all wounds, however insignificant, in which from the nature or surroundings there is any risk of tetanus. By open treatment is meant the free opening of the wound, cleansing from all foreign substances, swabbing thoroughly with 95 per cent. carbolic acid, followed by open dressing of the wound, with the institution of drainage. During the preparation of the grounds and buildings for the World's Fair in Chicago, at which time the conditions for the development of tetanus were exceedingly favorable by reason of the excavation, turning over of black soil, etc., more than 1,500 cases of punctured, incised and contused wounds were treated by the surgical staff on the grounds; in most instances the patients returned to work in two or three days, and in no case did tetanus develop.

4. The immediate use of tetanus antitoxin in all cases of Fourth of July wounds, wounds received in barn-yards,

gardens or other places where the tetanus bacillus is likely to be present or tetanus infection to occur. The neutralization of any toxin still in the blood and not yet fixed in the nerve cells can be effected by the injection of from five to ten cubic centimeters of tetanus antitoxin. This injection should be made as early as possible, and while its use may seem superfluous in cases in which wounds have been treated immediately and thoroughly, still it does no harm and gives additional assurance to the patient.

5. The injection of tetanus antitoxin as soon as tetanic symptoms become manifest. When the infection has so progressed that tetanus symptoms appear, the use of antitoxin is a forlorn hope, for, as Wells says, "a patient who has just developed symptoms of tetanus is not just developing the disease, but is dying of it." Although the results from the injection of tetanus antitoxin after the development of tetanus show thus far that only an exceedingly small percentage of recoveries take place, still, when the almost certainly fatal outcome of the acute form of the disease is considered, the use of the tetanus antitoxin is made justifiable.

In the presentation of this subject I am aware that I am not submitting anything original; but I desire earnestly to urge on the members of this association the advisability, or even the necessity, of carrying on the propaganda begun by *The Journal of the American Medical Association* and continued by the medical and lay press. Heretofore there has been much excitement regarding the matter of Fourth of July injuries for a month or two following the celebration, but then, with the lapse of time, the appreciation of the needlessness of this mortality lessens, and until public attention

is directed to the next series of deaths little thought is taken by the majority of the people. Physicians should take on themselves the burden of keeping the public aroused to the appalling mortality which succeeds a supposedly peaceful celebration, a mortality which with proper and thorough treatment, and with the enactment of sufficient laws, might be practically abolished. If the profession of the country would take united action in this matter, the mortality of 406 from tetanus following Fourth of July accidents alone might, in 1904, be reduced to zero. When it is remembered that by far the greatest number of deaths occurs in individuals who have not yet reached the age when they are able to distinguish between things dangerous and things safe, the responsibility of the physician as regards instruction of parents of the dangers to be feared and in the precautions to be observed and the treatment to be carried through, is immeasurably increased. The saving of four hundred lives from a burning or sinking ship would be considered well worth the doing. How much more important is the saving of hundreds of lives of the innocents from an unnecessary and horrible death!—*Jour. A. M. A., June 11.*

Review of Diseases for June, 1904.

EIGHTY COUNTIES REPORTING.

Ninety-six counties have Superintendents of Health

Except in the case of the more contagious and dangerous diseases the Superintendent has as a rule to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of June the following diseases have been reported from the counties named:

MEASLES.—Ashe, 1; Bertie, 1; Brunswick, several; Burke, many; Caldwell, many; Cumberland, in all parts; Davidson, many; Durham; Edgecombe, a few; Forsyth, several; Henderson, many; Lincoln, 2; Martin, many; Mitchell, 1; Pitt, 4; Randolph, several; Rockingham, a few; Rowan, 3; Scotland, several; Surry, 22; Wake, 1; Washington, 1; Yancey, a few—23 counties.

WHOOPING-COUGH.—Bertie, 1; Brunswick, several; Burke, 2; Caldwell, many; Clay, several; Cleveland, a few; Craven, a few; Dare; Edgecombe, several; Forsyth; Franklin, many; Gaston; Haywood, in all parts; Iredell, 10; Jackson; Macon, several; Martin, many; Onslow, 25; Pamlico, a few; Pitt, 2; Surry, epidemic; Swain, in all parts; Wake, 25—23 counties.

SCARLATINA.—Forsyth, 3; Gaston, 1; Randolph, a few; Rockingham, 4; Stanley, 1; Wake, 1—6 counties.

DIPHTHERIA.—Cabarrus, 1; Carteret, 1; Chowan, 1; Forsyth, 2; Gaston, 1; Guilford, 1; Haywood, 3; Onslow, 3; Pender, 3; Stanly, 2; Union, 10—11 counties.

TYPHOID FEVER.—Alamance, 5; Anson; Brunswick, 3; Burke, 4; Caldwell, a few; Camden, 2; Catawba, 3; Chowan, 5; Clay, 3; Cleveland, several; Craven, 6; Currituck, 1 or more; Davidson; Forsyth; Franklin, a few; Gaston, several; Gates, 4; Granville, 1; Harnett, a few; Iredell, 3; Lincoln, 10; Madison; McDowell, 1; Martin, several; Mecklen-

burg; Mitchell, 1; New Hanover, 11; Pamlico, 2; Pender, many; Pitt, 1; Randolph, several; Richmond, 3; Robeson, a few; Rockingham, a few; Rowan, 6; Sampson, a few; Scotland, a few; Stanly; Surry, 2; Union, 20; Vance, 4; Wake, 1; Washington, 1—43 counties.

MALARIAL FEVER.—Bertie; Brunswick; Caswell; Duplin; Edgecombe; Gates, 3; Hertford, in all parts; Martin, in all parts; Onslow; Pender; Pitt; Randolph; Sampson, a few; Union, 39; Vance, in all parts; Warren—16 counties.

MALARIAL FEVER, PERNICIOUS.—Brunswick, 1; Gates, 1.

BOWEL DISEASES, INCLUDING DYSENTERY.—Alamance, general; Alleghany; Ashe; Bertie; Brunswick; Burke; Cabarrus, general; Caldwell, general; Caswell; Cleveland; Cumberland, general; Currituck, general; Davie, general; Duplin; Edgecombe; Forsyth; Gaston, general; Gates, 48; Harnett; Henderson, general; Hertford, general; Iredell, general; Macon, general; Martin, general; Person; Richmond; Rockingham, general; Sampson, general; Vance, general; Washington, general—30 counties.

INFLUENZA.—Macon, in all parts.

MUMPS.—Clay; Sampson; Scotland.

TYPHUS FEVER.—Forsyth, "I found a family of negroes in the north end of the county who have typhus fever—one boy brought it (camp fever), so he says, from West Virginia. The cases are moderately mild. They are isolated."

SMALL-POX.—Anson, several; Ashe, 5; Bladen, 12; Buncombe, 7; Burke, 3; Cabarrus, 1; Catawba, 2; Cleveland, 1; Davidson, 1; Davie, 1; Durham, 6; Forsyth, 9; Gaston, 1; Guilford, 1; Haywood, 4; Jackson, 30 or 40, "We have all the infected houses under quarantine—some cases are severe and some mild. I cannot get the people to be

vaccinated—they seem to abhor the idea and say they would rather have the disease"; Mitchell, a few; Person, 27; Pitt, 3; Robeson, 25; Rockingham, 8; Scotland, 2; Surry, 13; Wake, 1; Wilkes, 4—25 counties.

CHOLERA IN HOGS.—Bertie.

HYDROPHOBIA IN DOGS.—Vance.

No diseases reported from Beaufort, Chatham, Johnston, Nash, Northampton, Pasquotank, Polk, Rutherford, Transylvania and Wilson.

No reports received from Alexander, Cherokee, Columbus, Graham, Halifax, Hyde, Jones, Lenoir, Montgomery, Moore, Orange, Perquimans, Stokes, Watauga, Wayne and Yadkin.

Summary of Mortuary Reports for June, 1904.

(TWENTY-FIVE TOWNS.)

	White.	Col'd.	Total.
Aggregate population.....	90,800	65,300	156,100
Aggregate deaths..	179	154	333
Representing temporary annual death-rate per 1,000	23.6	38.3	25.6
<i>Causes of Death.</i>			
Typhoid fever	4	7	11
Scarlet fever	0	1	1
Malarial fever	2	6	8
Whooping-cough..	1	0	1
Measles	1	0	1
Pneumonia	5	7	12
Consumption.....	19	19	38
Brain diseases.....	12	4	16
Heart diseases.....	6	13	19
Neurotic diseases..	2	3	5
Diarrhoeal diseases	59	41	100
All other diseases..	64	50	114
Accident	4	2	6
Suicide.....	0	1	1
	179	154	333
Deaths under five years.....	73	55	128
Still-born	8	16	24

Mortuary Report for June, 1904.

TOWNS AND REPORTERS	RACES.	POPULATION.		TEMPORARY ANNUAL DEATH-RATE PER 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrhoeal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	Total. Deaths.	By Races.	Deaths under five years.	Still-born.
		By Races.	Total.	By Races.	Total.																				
Charlotte	W.	11,000	18,200	38.2	24.8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	35	14	4	4
Dr. F. O. Hawley.	C.	7,200		18.3		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	11	46	6	2
Durham	W.	8,000	13,000	33.0	31.4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23	10	1	1
Dr. N. M. Johnson.	C.	5,000		28.8		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12	34	9	1
Edenton	W.	1,200	3,000	10.0	16.0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	4	1	1
Dr. T. J. Hoskins.	C.	1,800		20.0		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	4	1	1
Elizabeth City	W.	5,000	8,000	7.2	18.0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9	12	2	1
Dr. I. Fearing.	C.	3,000		36.0		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9	12	5	3
Fayetteville	W.	2,500	4,800	21.0	52.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	21	1	1
Dr. A. S. Rose.	C.	2,300		83.4		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	21	1	1
Goldsboro	W.	3,500	6,100	27.3	23.6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8	12	2	2
Robt. A. Creech, H. O.	C.	2,600		18.5		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	12	2	2
Greensboro	W.	6,100	10,100	21.6	28.8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	11	24	5	1
Jno. S. Michaux, C. C.	C.	4,000		39.0		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	13	24	2	1
Henderson	W.	2,100	3,800	11.4	18.9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	6	1	1
Dr. John H. Tucker.	C.	1,700		28.2		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	6	1	1
Laurinburg	W.	900	1,500	13.3	16.0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1
Dr. G. D. Everington.	C.	600		20.0		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1
Lexington	W.	800	1,300	15.0	9.3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
J. H. Moyer, Mayor.	C.	500		0.0		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Marion	W.	800	1,200	60.0	40.0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	4	1	1
Dr. B. L. Ashworth.	C.	400		0.0		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	4	1	1
Monroe	W.	1,850	2,450	0.0	4.9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
Dr. Jno. M. Blair.	C.	600		20.0		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
Oxford	W.	1,250	2,450	9.6	4.9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Dr. S. D. Booth.	C.	1,200		0.0		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
Raleigh	W.	8,000	13,800	16.5	19.1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	11	22	3	1
T. P. Sale, Clerk B. H.	C.	5,800		22.8		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	11	4	1	1
Rocky Mount	W.	1,600	3,100	22.5	11.6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	3	1	1
Dr. J. T. Shubrick, H. O.	C.	1,500		0.0		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	3	1	1
Salem	W.	3,300	3,650	29.1	26.3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8	8	4	1
S. E. Butner, Supt. H.	C.	350		0.0		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	4	1	1
Salisbury	W.	3,900	6,400	48.2	39.3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	21	9	1
Dr. H. T. Trantham.	C.	2,500		24.0		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	21	2	1
Southport	W.	900	1,400	0.0	8.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
Dr. D. I. Watson.	C.	500		24.0		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
Tarboro	W.	2,000	2,500	0.0	9.6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	2	1	1
Dr. Wm. J. Thigpen.	C.	500		48.0		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	2	1	1
Wadesboro	W.	1,000	1,700	24.0	28.2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	4	1	1
Dr. J. H. Bennett.	C.	700		34.2		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	4	1	1
Washington	W.	3,000	5,900	20.0	36.6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	18	1	1
Dr. D. T. Tayloe.	C.	2,900		53.8		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	13	18	2	1
Waynesville	W.	1,600	2,000	0.0	0.0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1
Dr. Thos. Stringfield.	C.	400		0.0		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1
Weldon	W.	700	1,450	34.2	33.1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	4	2	1
J. T. Gooch, Mayor.	C.	750		32.0		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	4	2	1
Wilmington	W.	10,000	21,000	27.6	29.1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23	51	12	1
Dr. Chas. T. Harper.	C.	11,000		30.5		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	28	51	13	6
Wilson	W.	3,800	6,800	9.4	10.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	6	1	1
Dr. W. S. Anderson.	C.	3,000		12.0		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	6	1	1
Winston	W.	6,000	10,500	24.0	28.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12	25	5	1
Dr. J. L. Hanes.	C.	4,500		34.6		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	13	25	4	1

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

County Superintendents of Health.

Alamance	Dr. T. S. Faucette.	Jones.....	Dr. N. G. Shaw.
Alexander	Dr. C. J. Carson.	Lenoir	Dr. C. L. Pridgen.
Alleghany	Dr. Robt. Thompson.	Lincoln	Dr. John W. Saine.
Anson	Dr. J. H. Bennett.	McDowell	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon	Dr. F. L. Siler.
Beaufort	Dr. D. T. Tayloe.	Madison	Dr. W. J. Weaver.
Bertie	Dr. H. V. Dunstan.	Martin.....	Dr. W. H. Harrell.
Bladen.....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin.
Brunswick	Dr. J. Arthur Dosher.	Mitchell.....	Dr. J. Warren Bailey.
Buncombe	Dr. D. E. Sevier.	Montgomery	Dr. M. P. Blair.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod.
Cabarrus.....	Dr. R. S. Young.	Nash.....	Dr. J. P. Battle.
Caldwell	Dr. W. P. Ivey.	New Hanover	Dr. W. D. McMillan.
Camden.....	Dr. J. L. Lister.	Northampton.....	Dr. H. W. Lewis.
Carteret	Dr. F. M. Clarke.	Onslow.....	Dr. E. L. Cox.
Caswell	Dr. S. A. Malloy.	Orange.....	Dr. D. C. Parris.
Catawba	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. T. A. Kirkman.	Pasquotank	Dr. J. B. Griggs.
Cherokee.....	Dr. B. B. Meroney.	Pender.....	Dr. R. J. Williams.
Chowan.....	Dr. T. J. Hoskins.	Perquimans.....	Dr. C. C. Winslow.
Clay	Dr. P. B. Killian.	Person	Dr. J. A. Wise.
Cleveland	Dr. B. H. Palmer.	Pitt.....	Dr. Zeno Brown.
Columbus.....	Dr. N. A. Thompson.	Polk	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph	Dr. W. J. Moore.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. F. J. Garrett.
Currituck	Dr. H. M. Shaw.	Robeson	Dr. H. T. Pope.
Dare	Dr. W. B. Fearing.	Rockingham	Dr. Sam Ellington.
Davidson.....	Dr. Joel Hill.	Rowan.....	Dr. W. L. Crump.
Davie	Dr. M. D. Kimbrough.	Rutherford.....	Dr. T. B. Twitty.
Duplin	Dr. A. J. Jones.	Sampson	Dr. John A. Stevens.
Durham	Dr. N. M. Johnson.	Scotland	Dr. A. W. Hamer.
Edgecombe	Dr. W. J. Thigpen.	Stanly.....	Dr. V. A. Whitley.
Forsyth.....	Dr. W. O. Spencer.	Stokes	Dr. W. V. McCanless.
Franklin	Dr. R. F. Yarborough.	Surry	Dr. John R. Woltz.
Gaston.....	Dr. H. F. Glenn.	Swain.....	Dr. A. M. Bennet.
Gates.....	Dr. W. O. P. Lee.	Transylvania	Dr. C. W. Hunt.
Graham.....	Dr. V. J. Brown.	Tyrrell.....	
Granville	Dr. S. D. Booth.	Union	Dr. John M. Blair.
Greene.....	Dr. W. B. Murphy, Jr.	Vance.....	Dr. H. H. Bass.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. J. L. McCullers.
Halifax	Dr. I. E. Green.	Warren.....	Dr. M. P. Perry.
Harnett.....	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. F. Abel.	Watauga.....	Dr. C. W. Phipps.
Henderson	Dr. J. G. Waldrop.	Wayne.....	Dr. Williams Spicer.
Hertford	Dr. C. F. Griffin.	Wilkes.....	Dr. W. P. Horton.
Hyde	Dr. E. H. Jones.	Wilson	Dr. W. S. Anderson.
Iredell	Dr. M. R. Adams.	Yadkin	Dr. T. R. Harding.
Jackson.....	Dr. R. L. Davis.	Yancey	Dr. J. L. Ray.
Johnston	Dr. Thel Hooks.		

[You are asked to fill out and mail one of these forms to the Superintendent of Health of your county on or before the third of each month, that he may use it in making his report to the Secretary of the State Board.]

Have any of the following diseases occurred in your practice during the month just closed. If so, state number of cases.

Whooping-cough	Typhoid Fever
Measles	Typhus Fever
Diphtheria	Yellow Fever
Scarlet Fever	Cholera
Pernicious Malarial Fever	Smallpox
Hemorrhagic Malarial Fever	Cerebro-spinal Meningitis

What have been the prevailing diseases in your practice?

.....

Has any epidemic occurred among domestic animals? If so, what?

.....

What is the sanitary condition of your section, public and private?

.....

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General Remarks:

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..... M. D.

BULLETIN

OF THE

NORTH CAROLINA BOARD OF HEALTH

Published Monthly at the Office of the Secretary of the Board, Raleigh, N. C.

GEO. G. THOMAS, M. D., <i>Pres.</i> , Wilmington.	W. P. IVEY, M. D.,-----Lenoir.
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RICHARD H. LEWIS, M. D., <i>Secretary and Treasurer</i> , Raleigh.	

VOL. XIX.

AUGUST, 1904.

No. 5.

THE PREVENTION OF TUBERCULOSIS.

At the recent meeting of the Board of Health it was decided to make a special and greater effort than ever before towards the prevention of the most fatal of all diseases—tuberculosis, appearing most commonly in the form of pulmonary consumption. To that end the appended article on the subject has been prepared for general distribution. It is our intention to mail a copy to every physician, minister, editor, lawyer, school-teacher, municipal and county officer, and others, accompanied by a letter asking their co-operation in this most important and, practically, most difficult work. The funds at the command of the Board are so limited that our efforts must necessarily be restricted, and upon careful consideration we believe that larger returns can be obtained from the method indicated than any other.

While most is to be expected, of course, from physicians, the editors of our newspapers can be of very great assistance in calling the attention of their readers to the matter. We earnestly ask their help.

CAUSES AND PREVENTION OF CONSUMPTION.

(Tuberculosis, Phthisis, Pulmonary Consumption.)

Pulmonary tuberculosis (consumption) is the most common form of tuberculosis, about 95.5 per cent. of all kinds, it is said. The other principal forms of tuberculosis are scrofula (of the glands), white swelling (of the bones and joints), and lupus (of the skin). These are milder in character, and not so dangerous as the pulmonary form.

Consumption is the most fatal of all diseases and is aptly called "The Great White Plague." It is estimated that one-seventh of all deaths from every cause in the civilized world are due to it. One-fourth of all who die in adult life—the most useful period—it is said, are the victims of this disease. In North Carolina, according to the last census report, about one-tenth of all deaths were attributed to consumption. In other words, between four and five thousand of our people die every year of a disease *that can be prevented*.

CAUSES.

It is a communicable disease, which means that it is transmitted from one case to another. The essential element in the transmission is a germ known as the *tubercle bacillus*, an extremely minute rod-like body, one-ten-thousandth of an inch long and one-fifty-thousandth of an inch in thickness. In common with all communicable diseases, it is a *preventable disease*.

The causes of consumption are of two classes, predisposing and exciting.

Predisposing Causes.—In every constitution there is, in varying degrees, a certain power of resistance to the inroads of disease germs, most pronounced in those in vigorous health. While it may be said that the disease itself is very rarely if ever inherited, the lack of this resisting power, just as any other constitutional peculiarity, is inherited, hence the great susceptibility of those belonging to consumptive families. This is greatly increased by intermarriage between such, which should not occur. But resistance is weakened by lowered vitality from any cause, as insufficient and impure air from overcrowding, especially in dark, damp, sunless, poorly ventilated apartments; insufficient or improper food; other diseases of a wasting character, as dyspepsia and typhoid fever, for example; overwork, worry, dissipation, etc. It is a mistaken notion that alcohol is a preventive or curative of consumption. The habitual user is an easier victim. As about three-fourths of the nourishment of the body is furnished by the oxygen taken in with the air breathed, a deformed or imperfectly developed chest, with the corresponding deficiency of lung expansion, is a predisposing cause. For the same reason, those having normal chests but who do not expand them by exercise in the open air are more susceptible. The improved general health of the people resulting from the advance in hygiene, and the outdoor life that has come to be largely the vogue in recent years, is doubtless to no small degree responsible for the marked reduction in the death-rate from consumption.

Exciting Cause.—The Tubercle Bacillus. This is found, with the exception of infected meat and milk, which we believe to be rare so far in our State, only in the pus or matter thrown off by a tuberculous patient in the sputum or spit from the diseased lungs, or discharged

in the other forms of tuberculosis. It is said that the number of the bacilli or germs thrown off in twenty-four hours in the advanced stage mount up sometimes into the billions. The sputum, therefore, is the chief source of the poison, and consequently its management is the most important item in the problem of the prevention of consumption. Although the germs may find their way into the system by being swallowed in infected food, tuberculous milk or meat, or eatables over which flies fresh from sputum have crawled, from kissing a consumptive on the lips, by putting infected articles in the mouth, as for example, coins that have been handled by a consumptive, etc., they are generally taken in with the breath in the form of dust. As long as the spit remains moist it is innocent in this regard, as the germs cannot be dislodged and floated into the air. For the same reason the breath of a consumptive is not dangerous, but the germs are sometimes found in the fine spray of saliva expelled to a distance of several feet in coughing, sneezing, loud talking and laughing. The germs cannot live for any length of time exposed to sunshine, fresh air, and rain. They retain their vitality sometimes for months when protected from these agencies. Consumption is therefore essentially a *house disease*. In a room occupied a large part of his time by a consumptive, the germs are not only more abundant but more persistent in action than elsewhere, and the darker and more badly ventilated the room the more so. Moreover, persons who live an indoor life are more susceptible.

PREVENTION.

From what has been said above, the following specific rules of conduct are deduced.

The sputum or spit of a consumptive should always be destroyed before it can dry and assume the form of dust. Indoors he should spit directly into the open fire, if there be one, or into a spittoon or spit-cup containing some disinfectant, 5 per cent. carbolic acid, 2 per cent. formaldehyde or one to two thousand corrosive sublimate. Plain water would be much better than nothing, as it would keep the sputum moist and for so long a time innocuous. The contents of the spittoon should be burned or buried and the vessel scalded with boiling water. Away from home, especially in public places of all kinds, he should religiously abstain from spitting on the floor or the sidewalk. He should always use some form of pocket spittoon, of which there are many varieties that can be obtained at a trifling cost, or expectorate upon pieces of rag or soft paper, which should be kept wrapped up in paraffin paper or other impervious material until they are burned. He should never spit into his handkerchief, lest the dry sputum be distributed in the air when he pulls it out.

Special care should be taken not to soil the hands, face or clothing with the sputum.

A consumptive should never cough, sneeze, talk loudly or laugh towards any one near at hand, but turn away his face, or hold his handkerchief in front of his mouth.

No consumptive should ever be kissed upon the lips—better not at all. Regard for the safety of his dear ones ought to make him refuse absolutely to be kissed.

Persons waiting upon consumptives should wash their hands frequently, always before eating. They should abstain from sharing with them articles of food sent to their rooms. They should, of course, keep constantly in mind the rules of prevention.

The tuberculous patient should have his own toilet articles, tableware and linen, and no one else should use them. In cleansing them they should be boiled, or at least washed with boiling water.

His underclothes, night-clothes and bed-linen should never be mixed with the linen of the family, but immediately upon removal be dropped into a tub of water and kept wet until they can be boiled and washed.

His room should be as airy and bright with sunshine as possible, having a southern exposure when feasible. It should be kept thoroughly ventilated with at least one window open day and night, winter and summer. It should be simply furnished, without carpet, curtains, furniture upholstered in cloth of any kind—all dust-catchers, in short. It should never be swept or dusted, but wiped with a damp cloth, which should immediately afterwards be burned, boiled, or soaked in a disinfecting solution.

No one, if it can be avoided, should sleep in the same room with a consumptive, never in the same or another bed very close to his. Besides the risk of catching the disease, the second person would consume a large part of the oxygen of the air which he so much needs.

Children, who have a habit of handling everything and putting their fingers in their mouths, ought not to be allowed in the room. This applies with special force to the crawling age.

A room vacated by a consumptive should never be occupied by another until it has been disinfected. Renters ought to refuse to take a house in which such a patient has lived until this has been done. In cities the municipal authorities should require the immediate disinfection of every house from which one dead of consumption has been buried. It would be best for the city to have this done by its own officials trained in the work. In order to reach these cases every town should forbid the burial or removal of any corpse except upon the presentation of a death certificate stating the cause of death, signed by the attending physician. Progressive towns do this any way in order to make an accurate record of their vital statistics.

A consumptive house servant or dairy hand is a source of danger that can and should be avoided. It would work no hardship, for a different life would be better for the patient. This warning applies especially to

the South, for the reason that the disease is very much more prevalent in the colored than in the white race.

The outer clothes of a consumptive and the woolen skirts of all women which have trailed over the floors of infected houses, of public halls, of street-cars and over the sidewalks should be brushed out-of-doors, and the brusher should avoid, as far as possible, inhaling the dust, always breathing through the nose. Dark petticoats, often tucked or flounned at the bottom, which are never washed and which accumulate filth month after month, are very objectionable.

The danger from tuberculous meat is slight because the germs are killed in cooking, but it is much greater from milk which is taken raw, and which, besides, is more liable to infection. Milk from a cow with a diseased udder should never be used. Cities and towns ought to require of every dairyman selling milk to their people a license granted only upon the observation of the proper sanitary rules, including the tuberculin test, and revocable upon violation of these rules.

Every municipality should adopt and enforce an ordinance against spitting on the sidewalks and on the floors of public places.

Compulsory notification would be very helpful, especially in the case of the very poor.

It is the plain duty of every consumptive, to his loved ones and the public, once in possession of the facts above set forth, to observe all the precautions laid down, and of those intimately associated with him to see that he does it.

It is likewise the duty of every physician to see that these facts are impressed upon his consumptive patients and their families. The interested co-operation of the attending physician is by far the most important element in the solution of this difficult and dreadful problem. Without it comparatively little can be done, with it wonders can be accomplished.

It should be borne in mind that a consumptive taking the precautions above set forth in the management of his sputum is not at all a source of danger to others, and need not be avoided. It would be unnecessary cruelty to treat him like a leper. But his friends should see that he does take the precautions.

OFFICES AND SHOPS.

In business offices, shops, factories, or any other places where a number of persons are shut indoors together, the danger of infection is increased. The managers of such offices or factories, for their own protection as well as that of their employees, should see that the proper precautions are observed. Free ventilation should be had and a rigid anti-spitting rule should be enforced. Spittoons containing water under all circumstances, and a disinfectant if there be present a known case of consumption, should be provided and their invariable use insisted upon.

Book-keepers should never moisten the finger to turn a page. The Michigan Board of Health reports twenty successive cases of consumption in one office in Detroit as originating from one case who had this habit. The germs were found on the leaves of the books. His successors picked them up and put them into their own mouths, or scattered them in the air as dust in turning the leaves and inhaled them. No individual having a cough ought to use the common drinking cup, but use his own exclusively.

Provision should be made in all hospitals for the insane and in prisons for the separation of the tuberculous from the otherwise healthy. The utter helplessness of the inmates makes this an imperative demand of humanity.

A WORD AS TO TREATMENT.

Tuberculosis, *if taken in time*, is one of the most curable of chronic diseases. In the first stage, before the lungs begin to break down, there is no expectoration, no pus or matter containing germs is thrown off, and it is not contagious. In this stage it can be cured by proper care in the majority of cases. It is therefore all-important to the patient and the public, his immediate family in particular, that the diagnosis be made as early as possible. To this end, any person suffering from a general decline in health, especially if marked by a gradual loss of flesh, loss of appetite, a slight morning cough, feverishness, and perhaps huskiness of voice towards evening, should seek medical advice without delay. There seems to be a tendency on the part of both the patient and his friends to resent the suggestion that he has consumption, to deny it, and perhaps to discharge his true and candid physician—and *lose the golden opportunity of cure*. He should accept and act upon it *at once—with hope*.

The modern treatment of tuberculosis, which has been so successful, consists not in the use of drugs to any considerable extent, but in *fresh air* at all times, day and night, an abundance of highly nutritious food (rich milk, eggs, good beef, etc.), and a well-ordered life in accordance with the principles of hygiene. The consumptive should beware of patent medicines or over-confidence in any drug, lest the chance of cure be lost while leaning on a broken reed.

The success of the treatment is chiefly in the hands of the patient himself. A resolute will, a cheerful spirit, and obedience to discipline will overcome the disease in very many cases.

Copies of this Bulletin will be gladly furnished free to any one who will ask for them and distribute them.

Issued by the North Carolina Board of Health.

GEO. G. THOMAS, M. D.,
President.

RICH'D H. LEWIS, M. D.,
Secretary.

REVIEW OF DISEASES FOR JULY, 1904.

EIGHTY-FIVE COUNTIES REPORTING.

Ninety-five counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases the Superintendent has as a rule to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of July the following diseases have been reported from the counties named:

MEASLES.—Burke, many cases; Camden, 1; Chowan, 6; Columbus, 25; Durham, a few; Henderson, a few; Hertford, in all parts; Lincoln, 1; Martin, many; Mitchell, 1; New Hanover, 10; Pitt, 2; Wake, 1; Warren, 1—14 counties.

WHOOPING-COUGH.—Beaufort, 7; Burke in nearly all parts; Caldwell, many; Clay, several; Columbus, 13; Craven, a few; Cumberland; Dare, 11; Durham, a few; Franklin, many; Gaston, many; Granville, 8; Haywood, in all parts; Iredell, 3; Jones, 6; Macon, in all parts; Martin, many; Mitchell, 6—18 counties.

SCARLATINA.—Cumberland, 1; Forsyth, 3; New Hanover, 1; Rockingham, a few; Stanly, 1—5 counties.

DIPHTHERIA.—Cabarrus, 2; Chowan, 1; Craven, 1; Cumberland, 1; Gaston, a few; Guilford, 1; New Hanover, 1; Stanly, 4; Surry, 2; Union, 10—10 counties.

TYPHOID FEVER.—Alamance, 3; Alexander, 10; Alleghany, 2; Ashe, 4; Beaufort, 8; Bertie, several; Buncombe, 2; Burke, 25; Cabarrus, 2; Caldwell, many; Camden, 2; Caswell, 1; Catawba, 5; Chatham; Chowan, 20; Clay, 5; Cleveland, a few; Columbus, 15; Craven, 7; Cumberland, in all parts; Currituck, a few; Dare, 2; Davidson; Duplin, 3; Durham, 2 or 3; Edgecombe, several; Franklin, a few; Gaston, a few; Gates, 5; Granville, 1; Greene, 25; Guilford, 4; Harnett, many; Haywood, 8; Henderson, 3; Hertford, 8; Iredell, 10; Johnston; Lincoln, 8; McDowell, 8; Macon, 3; Madison; Martin, several; Mecklenburg; Mitchell, 4; Moore, a few; Nash, 3; New Hanover, 17; Northampton, a great many; Pasquotank; Pender, 12; Perquimans, 3; Person, 1; Pitt, 3; Randolph, several; Richmond, 8; Robeson, a few; Rockingham; Rutherford; Sampson, a few; Scotland, a few; Stanly; Surry, 4; Swain, 1; Union, 30; Vance, 15; Wake, 16; Warren, 17; Washington, 8; Wayne, several; Wilkes, 4; Yadkin, several; Yancey, a few—73 counties.

MALARIAL FEVER.—Alamance; Bertie; Camden, general; Chowan, general; Columbus; Cumberland, general; Currituck, in many parts; Duplin;

Edgecombe; Gates, 7; Jones; Martin; Northampton, general; Perquimans, general; Person; Randolph, in most parts; Sampson, a few; Vance, general; Wake; Washington, general; Wayne, general—22 counties.

MALARIAL FEVER, PERNICIOUS.—Columbus, 3; Jones, 2; Wake, 1.

BOWEL DISEASES.—Alexander, general; Ashe, general; Burke, in nearly all parts; Caldwell; Cleveland; Columbus; Currituck, in many parts; Gates, general; Greene, general; Harnett; Henderson, general; Jones, general; Moore; Richmond; Rockingham, general; Sampson, general; Surry; Yancey—18 counties.

MUMPS.—Sampson, a few.

SMALL-POX.—Anson, a few; Ashe, 1; Bladen, 14; Brunswick, several; Cleveland, 5; Davidson, 2; Durham, 3; Forsyth, 2; Harnett, 1; Haywood, 5; Jackson, 100; Johnston, 3; Macon, 1; Mitchell, 8; New Hanover, 6; Rockingham, 3; Swain, 1; Wayne, a few—18 counties.

CHOLERA, IN HOGS.—Brunswick; Chowan; Martin; Sampson.

HYDROPHOBIA, IN DOGS.—Caswell, 1—a dog bit 3 persons, all of whom were sent to the Pasteur Institute in Baltimore.

No diseases reported from Carteret, Halifax, Polk and Wilson.

No reports received from Cherokee, Graham, Lenoir, Montgomery, Onslow, Orange, Pamlico, Rowan, Transylvania and Watauga.

SUMMARY OF MORTUARY REPORTS FOR JULY, 1904.

(TWENTY-FIVE TOWNS).

	White.	Colored.	Total.
Aggregate population	89,200	63,800	153,000
Aggregate deaths	151	160	311
Representing temporary annual death-rate per 1,000.....	20.3	30.1	24.4
<i>Causes of Death.</i>			
Typhoid fever	11	10	21
Scarlet fever	0	3	3
Malarial fever	4	5	9
Whooping-cough	2	1	3
Measles	1	1	2
Pneumonia	6	4	10
Consumption	4	18	22
Brain diseases	9	1	10
Heart diseases	11	15	26
Neurotic diseases	2	6	8
Diarrhœal diseases	39	36	75
All other diseases	57	55	112
Accident	4	5	9
Violence	1	0	1
	<hr/>	<hr/>	<hr/>
	151	160	311
Deaths under five years.....	58	64	122
Still-born	11	16	27

County Superintendents of Health.

Alamance	Dr. H. R. Moore.	Jones.....	Dr. N. G. Shaw.
Alexander	Dr. C. J. Carson.	Lenoir	Dr. C. L. Pridgen.
Alleghany	Dr. Robt. Thompson.	Lincoln	Dr. John W. Saine.
Anson	Dr. J. H. Bennett.	McDowell	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon	Dr. F. L. Siler.
Beaufort	Dr. D. T. Tayloe.	Madison	Dr. W. J. Weaver.
Bertie	Dr. H. V. Dunstan.	Martin.....	Dr. W. H. Harrell.
Bladen.....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin.
Brunswick	Dr. J. Arthur Doshier.	Mitchell.....	Dr. J. Warren Bailey.
Buncombe	Dr. D. E. Sevier.	Montgomery	Dr. M. P. Blair.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod.
Cabarrus.....	Dr. R. S. Young.	Nash.....	Dr. J. P. Battle.
Caldwell	Dr. W. P. Ivey.	New Hanover	Dr. W. D. McMillan.
Camden.....	Dr. J. L. Lister.	Northampton.....	Dr. H. W. Lewis.
Carteret	Dr. F. M. Clarke.	Onslow.....	Dr. E. L. Cox.
Caswell	Dr. S. A. Malloy.	Orange.....	Dr. D. C. Parris.
Catawba	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. T. A. Kirkman.	Pasquotank	Dr. J. B. Griggs.
Cherokee.....	Dr. B. B. Meroney.	Pender.....	Dr. R. J. Williams.
Chowan.....	Dr. T. J. Hoskins.	Perquimans.....	Dr. C. C. Winslow.
Clay.....	Dr. P. B. Killian.	Person.....	Dr. J. A. Wise.
Cleveland	Dr. B. H. Palmer.	Pitt.....	Dr. Zeno Brown.
Columbus.....	Dr. N. A. Thompson.	Polk.....	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph	Dr. W. J. Moore.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. F. J. Garrett.
Currituck	Dr. H. M. Shaw.	Robeson	Dr. H. T. Pope.
Dare.....	Dr. W. B. Fearing.	Rockingham	Dr. Sam Ellington.
Davidson	Dr. Joel Hill.	Rowan.....	Dr. W. L. Crump.
Davie	Dr. M. D. Kimbrough.	Rutherford.....	Dr. T. B. Twitty.
Duplin	Dr. A. J. Jones.	Sampson	Dr. John A. Stevens.
Durham	Dr. N. M. Johnson.	Scotland	Dr. A. W. Hamer.
Edgecombe	Dr. W. J. Thigpen.	Stanly.....	Dr. V. A. Whitley.
Forsyth.....	Dr. W. O. Spencer.	Stokes	
Franklin	Dr. R. F. Yarborough.	Surry	Dr. John R. Woltz.
Gaston.....	Dr. H. F. Glenn.	Swain.....	Dr. A. M. Bennet.
Gates.....	Dr. W. O. P. Lee.	Transylvania	Dr. C. W. Hunt.
Graham.....	Dr. V. J. Brown.	Tyrrell.....	
Granville	Dr. S. D. Booth.	Union	Dr. John M. Blair.
Greene.....	Dr. W. B. Murphy, Jr.	Vance.....	Dr. H. H. Bass.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. J. L. McCullers.
Halifax.....	Dr. I. E. Green.	Warren.....	Dr. M. P. Perry.
Harnett.....	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. F. Abel.	Watauga.....	Dr. C. W. Phipps.
Henderson	Dr. J. G. Waldrop.	Wayne.....	Dr. Williams Spicer.
Hertford	Dr. C. F. Griffin.	Wilkes.....	Dr. W. Horton.
Hyde.....	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson.
Iredell	Dr. M. R. Adams.	Yadkin	Dr. T. R. Harding.
Jackson.....	Dr. R. L. Davis.	Yancey	Dr. J. L. Ray.
Johnston	Dr. Thel Hooks.		

[You are asked to fill out and mail one of these forms to the Superintendent of Health of your county on or before the third of each month, that he may use it in making his report to the Secretary of the State Board.]

Have any of the following diseases occurred in your practice during the month just closed. If so, state number of cases.

Whooping-cough ----- Typhoid Fever -----

Measles ----- Typhus Fever -----

Diphtheria ----- Yellow Fever -----

Scarlet Fever ----- Cholera -----

Pernicious Malarial Fever ----- Smallpox -----

Hemorrhagic Malarial Fever ----- Cerebro-spinal Meningitis -----

What have been the prevailing diseases in your practice?

Has any epidemic occurred among domestic animals? If so, what?

What is the sanitary condition of your section, public and private?

General Remarks: -----

----- M. D.

----- 190 ----- N. C.

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RICHARD H. LEWIS, M. D., <i>Secretary and Treasurer</i> , Raleigh.	

VOL. XIX.

SEPTEMBER, 1904.

No. 6.

TYPHOID FEVER AND DRINKING WATER.

Late summer and early fall is the season of greatest prevalence of typhoid fever, and we are now in the midst of it. Upon reference to the review of diseases it will be seen that of the eighty-five counties reporting, seventy report typhoid fever as being present. Of the seventy, thirty-seven give a definite number of cases, varying from two to thirty, making a total of 367, while the remaining thirty-three counties vary in their reports, some merely making the general statement of its presence, while others say "a few," "several," "many," "in all parts." Assuming the same ratio for these, we would have 330 cases, making the whole number for the seventy counties even seven hundred. But these figures do not represent by any means all the cases of typhoid fever in the State during the month of August. Twelve counties did not report at all. A constant complaint of county superintendents of health is that physicians generally will not report to them the particular infectious diseases which the law specifically requires them to report, and as typhoid fever is not named in this class, the reports thereof are doubtless much more defective. We feel morally certain that there were not less than fifteen hundred cases, and there were probably more. On the basis of a ten-per-cent. death-rate, this would mean 150 deaths, and 1,350 cases which recovered during the single month of August. Leaving out of consideration the sorrow and distress occasioned, let us take a purely commercial view of the matter and see what it means in dollars and cents. The value placed upon a human life by the health authorities of

the State of New York is \$5,000, while an insurance expert of standing has figured out the life of a common laborer to be worth more than \$8,000. Accepting the more conservative estimate, and computing the loss of time of the cases which recovered at three months, and valuing the same at \$10, the wages of an ordinary field hand, the loss to the State in one month from one disease has been in round numbers \$800,000. And this disease, too, is a preventable disease, and a large proportion of the cases are directly attributable to ignorance and carelessness—more's the pity.

The germs of typhoid fever come from the bowel and kidney discharges of a case of the disease. If these discharges are thoroughly disinfected *immediately* upon their passage, before flies can crawl over them, to subsequently crawl over food and infect that, and before they are carelessly thrown out to wash into or soak into springs, wells or public water supplies, this most serious disease will be greatly diminished, to say the least. While flies undoubtedly play no inconsiderable part in the spread, its origin generally is in infected drinking water. Being for the most part a disease of the country, the contaminated water supplies are usually wells and springs; but cities and towns are by no means free from it, and when a public supply does become seriously infected the ravages of the disease are appalling, as appears in the extract from the report of the recent epidemic at Butler, Pa., which we give below.

We learn from this report that the immediate cause of the outbreak was the breaking of the dam of the reservoir, necessitating pumping directly from the stream and the *abandonment of the filters*. In this instance the effect of mechanical filtration in pumping the water was very striking and convincing. To show the effect of filtration in removing bacteria from water, we will quote three of the many biological analyses made at Butler. Raw water, 23,000; filtered water, 105; raw water, 34,000; filtered water, 120; raw water, 50,000; filtered water, 85.

The following is the conclusion of the report:

"The conclusions to be drawn from a review of the facts as they have been found to exist are that, following the destruction of the Boydstown dam on August 28, water for distribution to the people of Butler was taken from the Connoquenessing creek through an emergency intake at the pumping station; an examination of the waters of this creek showed that it maintains a fairly constant evidence of pollution, and that at various periods the operation of the filter plant designed to remove such pollution was partially or entirely suspended, and that as a result of this polluted water being used for domestic purposes, 1,348 persons who so used it were stricken with typhoid fever between October 1, 1903, and January 29, 1904, with 111 fatalities.

"In comparison with other epidemics of typhoid fever which have occurred at different periods. Butler presents in point of numbers one of the greatest epidemics in proportion to the population in the history of the world. The records in comparison with certain other epidemics being as follows:

Location.	Date.	Population.	Cases.	Deaths.
Lausen, Switzerland -----	1872	780	144	-----
Caterham, England -----	1879	5,800	352	21
Plymouth, Pa. -----	1885	8,000	1,104	114
Ithaca, N. Y. -----	1903	13,000	1,300	78
Butler, Pa. -----	1903 and 1904	18,000	1,348	111

"It will be noticed from these statistics that Pennsylvania, within the last score of years, has contributed two of the most serious epidemics of a preventable disease which have occurred in recent years.

"This epidemic illustrates the serious burden of responsibility which rests upon both municipal and private corporations engaged in supplying water for domestic uses, and at the same time demonstrates that the streams of our State, even in comparatively remote sections, are capable of receiving such serious contamination that they should become the objects of the most careful supervision on the part of local and State authorities.

"That such a distressing calamity could occur in a community which prided itself on the safeguards of storage and filtration which they had provided naturally excites the greatest anxiety concerning those very numerous communities which have no such protection.

"The efforts which have been made to secure a pure water supply for Butler have been of a far more energetic character than the very great majority of our municipalities have made.

"While ample storage has been provided for raw water and competent filters have been installed, the Butler system yet lacks the storage facilities for filtered water which would safeguard the town in event of enforced suspension of filtration for a period greater than twenty-four hours.

"The efficiency of filtration as a means of purifying water has been well illustrated in this instance, for although the polluted water of the Connoquenessing creek was used from August 28 to November 15, typhoid fever did not occur until the operation of the filter plant was interrupted in October. No object lesson to be learned from the epidemic can be compared, however, with the necessity which has been shown to exist for the compulsory registration by physicians of contagious and infectious diseases occurring in rural districts."

The lessons to be drawn from the above by our water companies are: the frequent and thorough policing of their watersheds by all having

surface supplies: regular and systematic analyses by all, for even deep wells can and do become infected; in a word, strict compliance with the law as laid down in the act to protect water supplies, and the installation and careful operation of first-class filters for surface supplies where not already in use.

In this connection we feel that we should publicly express our gratification at the management of the Durham Water Company on this line. Recently the regular report of our biologist showed the water to be dangerous. Colonel Michie, the superintendent of the company, immediately notified the public of the fact, and urged them to boil their water for drinking until the trouble could be located and remedied. He then had analyses made every other day, and set diligently to work to find it. It was traced to the very low water in an impounding reservoir on a very small stream—one source of the supply. This was abandoned and all the water taken from the Eno river, and now the water is excellent again—biologically as good as any. This action was not only morally right, but it fulfilled the old adage that "honesty is the best policy," for as long as the company is under the present management the people can use the water with confidence, feeling assured that prompt notice will be given of danger and everything done to avert it. This should and no doubt will increase the number of consumers. We earnestly hope that all our water companies will follow this example of conscientious and efficient management, should occasion arise.

REVIEW OF DISEASES FOR AUGUST, 1904.

EIGHTY-FIVE COUNTIES REPORTING.

Ninety-six counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of August the following diseases have been reported from the counties named:

MEASLES.—Brunswick, 3 cases; Cleveland, 4; Durham, 5; Gates, 10; Hertford, a few; Jones, 10; Martin, a few; Mitchell, 1; Onslow, 15; Person; Pitt, 1; Randolph, a few; Wake, 12; Watauga, a few—14 counties.

WHOOPING-COUGH.—Caldwell, several; Caswell, a few; Clay, several; Columbus, 2; Forsyth; Franklin, many; Gates, 20; Graham, many; Halifax, several; Haywood, in all parts; Jones; Macon, in all parts; Onslow, 10; Pitt, 2; Rutherford, a few; Vance, 5; Wake, 3—17 counties.

SCARLET FEVER.—Cumberland, 5; Forsyth, 5; Gaston, 6; Person, 1; Rockingham, epidemic; Wilkes, 2—6 counties.

DIPHTHERIA.—Cabarrus, 5; Cumberland, 3; Gaston, 3; Granville, 6; Halifax, 1; Haywood, 2; Mitchell, 4; New Hanover, 1; Northampton, 12; Rockingham; Sampson, 1; Stanly, 31; Wake, 1; Wayne, several; Wilkes, 10—15 counties.

TYPHOID FEVER.—Alamance, 25; Alleghany, a few; Anson, several; Bertie, 8; Burke, 5; Cabarrus, 5; Caldwell, many; Camden, 3; Caswell, 3; Catawba, 4; Chatham; Chowan, 30; Clay, 4; Cleveland, a few; Craven, 5; Cumberland, in all parts; Dare, 5; Davidson; Duplin, a few; Durham, 5; Edgecombe, several; Forsyth; Franklin, many; Gaston, several; Gates, 2; Graham, 2; Granville, 12; Greene, 10; Halifax, many; Harnett, many; Haywood, 15; Henderson, 3; Hertford, several; Iredell, 10; Jackson, 4; Johnston, a few; Lenoir, many; Lincoln, 10; McDowell, 12; Macon, 10; Madison, in all parts; Martin, 15; Mecklenburg; Mitchell; Moore, a few; Nash, 14; New Hanover, 9; Northampton, many; Onslow, 20; Orange, 2; Pasquotank; Person; Pitt, 4; Randolph, many; Richmond, 8 or 10; Robeson, several; Rockingham, several; Rowan, 8; Rutherford, 5; Sampson; Scotland, a few; Stanly; Surry, 15; Vance, 12; Wake, 16; Watauga, 20 or 30; Wilkes, 15; Wilson; Yadkin, in nearly all parts; Yancey, a few—70 counties.

MALARIAL FEVER.—Bertie; Camden, in all parts; Caswell; Chowan; Columbus; Craven; Currituck, a few; Dare; Duplin; Edgecombe, in all parts; Forsyth; Gaston, in all parts; Gates, 22; Halifax; Hertford, in all parts; Johnston, in all parts; Jones; Lenoir, in all parts; Lincoln; Martin; Northampton; Onslow; Pitt; Richmond; Rowan; Sampson; Vance, in all parts; Washington—28 counties.

MALARIAL FEVER, PERNICIOUS.—Martin, 1; Northampton, 2; Onslow, 1; Washington, 1.

MALARIAL FEVER, HEMORRHAGIC.—Bertie, 1; Martin, 1; Onslow, 2.

BOWEL DISEASES.—Currituck; Harnett; Randolph; Sampson.

INFLUENZA.—New Hanover.

MUMPS.—Clay; Duplin; Randolph, a few.

PNEUMONIA.—Greene, 1; Johnston; Randolph, a few.

SMALL-POX.—Brunswick, 3; Cleveland, 4; Durham, 5; Greene, a few; Haywood, 8; Jackson, 100; Johnston, 2; Macon, 5; Mecklenburg, 1; Mitchell, 5; New Hanover, 4; Scotland, 1; Swain, 2—13 counties.

CHOLERA, IN HOGS.—Brunswick; Chowan; Clay; Gates; Sampson; Washington—6 counties.

HYDROPHOBIA, IN DOGS.—Franklin.

No diseases reported from Buncombe, Carteret, Davie, Guilford, Perquimans, Polk, Transylvania and Warren.

No reports received from Alexander, Ashe, Beaufort, Bladen, Cherokee, Hyde, Montgomery, Pamlico and Union.

SUMMARY OF MORTUARY REPORTS FOR AUGUST, 1904.

TWENTY-TWO TOWNS.

	<i>White.</i>	<i>Colored.</i>	<i>Total.</i>
Aggregate population	83,350	59,600	142,950
Aggregate deaths	116	156	272
Representing temporary annual death-rate per 1,000	16.7	31.2	22.8
<i>Causes of Death.</i>			
Typhoid fever	12	15	27
Malarial fever	2	10	12
Whooping-cough	0	1	1
Pneumonia	2	0	2
Consumption	15	19	34
Brain diseases	10	4	14
Heart diseases	4	14	18
Neurotic diseases	3	9	12
Diarrhæal diseases	21	30	51
All other diseases	44	47	91
Accident	2	7	9
Violence	1	0	1
	<hr/> 116	<hr/> 156	<hr/> 272

Mortuary Report for August, 1904.

TOWNS AND REPORTERS	RACES.	POPULATION.		TEMPORARY ANNUAL DEATH-RATE PER 1,000.																TOTAL DEATHS.		Deaths under five years. Still-born.			
		By Races.	Total.	By Races.	Total.	Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrhoeal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.		By Races.	By Towns.	
Charlotte	W.	11,000	18,200	14.2	17.9	1	1	1	1	1	4	4	1	5	1	1	13	28	3	2	13	28	3	2	
Dr. F. O. Hawley.	C.	7,200	..	25.3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Durham	W.	8,000	13,000	24.0	30.5	2	..	..	..	..	4	..	4	6	..	16	33	8	..	..	..	16	33	8	..
Dr. N. M. Johnson.	C.	5,000	..	36.0	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Edenton	W.	1,200	3,000	10.6	12.0	..	..	..	..	..	..	..	..	1	..	1	2	3	1	..	..	2	3	1	..
Dr. T. J. Hoskins.	C.	1,800	..	13.3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Elizabeth City	W.	5,000	8,000	9.6	19.5	1	..	2	..	..	..	1	..	1	..	4	13	1	..	..	..	9	13	1	..
Dr. I. Fearing.	C.	3,000	..	36.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Fayetteville	W.	2,500	4,800	21.0	35.0	..	..	..	..	..	2	1	..	2	..	5	14	6	..	..	..	5	14	6	..
Dr. A. S. Rose.	C.	2,300	..	47.0	..	..	..	1	..	..	..	1	1	1	4	..	..	..	..	..	..	..	..	..
Goldsboro	W.	3,500	6,100	10.3	17.7	1	..	..	..	..	1	..	1	3	..	1	9	2	..	..	..	3	9	2	..
Robt. A. Creech, H. O.	C.	2,600	..	27.7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Greensboro	W.	6,100	10,100	21.6	26.1	2	..	1	..	..	1	..	1	5	..	11	22	3	..	..	..	11	22	3	..
Jno. S. Michaux, C. C.	C.	4,000	..	33.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Henderson	W.	2,100	3,800	5.2	12.6	..	..	..	..	..	1	..	..	..	..	..	3	4	..	..	..	1	4	..	..
Dr. John H. Tucker.	C.	1,700	..	21.2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Laurinburg	W.	900	1,500	40.0	40.0	1	..	..	..	..	..	1	..	1	..	3	5	..	..	..	..	3	5	..	..
Dr. G. D. Everington.	C.	600	..	40.0	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lexington	W.	800	1,300	30.0	18.5	..	..	..	..	..	..	..	..	2	..	2	2	..	..	..	..	2	2	..	..
J. H. Moyer, Mayor.	C.	500	..	0.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Marion	W.	800	1,200	90.0	60.0	3	..	..	..	..	..	..	..	3	..	6	6	..	..	..	..	6	6	..	..
Dr. B. L. Ashworth.	C.	400	..	0.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Oxford	W.	1,250	2,450	0.0	4.9	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	1	1	..	..
Dr. S. D. Booth.	C.	1,200	..	10.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Raleigh	W.	8,000	13,800	16.5	19.1	..	..	..	..	..	1	1	..	2	7	..	11	22	..	..	..	11	22	..	..
T. P. Sale, Clerk B. H.	C.	5,800	..	22.7	..	..	..	..	..	..	..	1	..	9	1	..	11	..	..	..	..	..	..	..
Salem	W.	3,300	3,650	0.0	0.0	..	..	..	..	..	..	..	..	..	..	..	0	0	..	..	..	0	0	..	..
S. E. Butner, Supt. H.	C.	350	..	0.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Salisbury	W.	3,900	6,400	21.6	22.5	1	..	..	..	..	2	..	3	2	..	8	12	3	..	..	..	4	12	3	..
Dr. H. T. Trantham.	C.	2,500	..	19.2	..	2	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..
Southport	W.	900	1,400	26.7	26.0	..	..	..	..	..	..	1	..	1	..	2	3	1	..	..	..	2	3	1	..
Dr. D. I. Watson.	C.	500	..	24.0	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	1	..	..
Tarboro	W.	2,000	2,500	6.0	9.6	..	..	..	..	..	..	..	..	1	..	1	2	..	..	..	..	1	2	..	..
Dr. Wm. J. Thigpen.	C.	500	..	24.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Waynesville	W.	1,600	2,000	15.0	12.0	1	..	..	..	..	..	..	..	..	..	1	2	1	..	..	..	2	2	1	..
Dr. Thos. Stringfield.	C.	400	..	0.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Weldon	W.	700	1,450	34.3	41.4	..	..	..	..	..	..	..	..	2	..	2	5	2	..	..	..	..	..	..	..
J. T. Gooch, Mayor.	C.	750	..	48.0	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Wilmington	W.	10,000	21,000	19.2	30.3	..	1	6	..	..	1	2	1	3	3	4	16	53	7	..	..	16	53	7	..
Dr. Chas. T. Harper.	C.	11,000	..	40.4	..	1	..	..	..	..	..	2	4	2	11	8	3	37	15	..	..	37	15	..	..
Wilson	W.	3,800	6,800	18.9	26.5	1	..	..	..	..	..	..	..	2	4	..	6	15	4	..	..	6	15	4	..
Dr. W. S. Anderson.	C.	3,000	..	36.0	..	..	..	..	..	..	3	..	..	3	2	..	9	5	..	..	..	9	5	..	..
Winston	W.	6,000	10,500	6.0	20.6	1	..	..	..	..	1	1	1	1	2	1	3	18	3	..	..	3	18	3	..
Dr. J. L. Hanes.	C.	4,500	..	40.0	..	1	..	..	..	..	3	1	4	1	2	2	15	3	..	..	..	15	3	..	..

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

*In addition there were two deaths from consumption, non-residents, white.

County Superintendents of Health.

Alamance	Dr. H. R. Moore.	Jones.....	Dr. N. G. Shaw.
Alexander	Dr. C. J. Carson.	Lenoir	Dr. C. L. Pridgen.
Alleghany	Dr. Robt. Thompson.	Lincoln	Dr. John W. Saine.
Anson	Dr. J. H. Bennett.	McDowell	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon	Dr. W. A. Rogers.
Beaufort	Dr. D. T. Tayloe.	Madison	Dr. W. J. Weaver.
Bertie	Dr. H. V. Dunstan.	Martin	Dr. W. H. Harrell.
Bladen.....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin.
Brunswick	Dr. J. Arthur Doshier.	Mitchell.....	Dr. J. Warren Bailey.
Buncombe	Dr. D. E. Sevier.	Montgomery	Dr. M. P. Blair.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod.
Cabarrus.....	Dr. R. S. Young.	Nash	Dr. J. P. Battle.
Caldwell	Dr. W. P. Ivey.	New Hanover	Dr. W. D. McMillan.
Camden.....	Dr. J. L. Lister.	Northampton.....	Dr. H. W. Lewis.
Carteret	Dr. F. M. Clarke.	Onslow.....	Dr. E. L. Cox.
Caswell	Dr. S. A. Malloy.	Orange.....	Dr. C. D. Jones.
Catawba	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. T. A. Kirkman.	Pasquotank	Dr. J. B. Griggs.
Cherokee.....	Dr. B. B. Meroney.	Pender.....	Dr. R. J. Williams.
Chowan.....	Dr. T. J. Hoskins.	Perquimans	Dr. C. C. Winslow.
Clay	Dr. P. B. Killian.	Person	Dr. J. A. Wise.
Cleveland	Dr. B. H. Palmer.	Pitt.....	Dr. Zeno Brown.
Columbus.....	Dr. N. A. Thompson.	Polk	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph	Dr. W. J. Moore.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. F. J. Garrett.
Currituck	Dr. H. M. Shaw.	Robeson	Dr. H. T. Pope.
Dare	Dr. W. B. Fearing.	Rockingham	Dr. Sam Ellington.
Davidson.....	Dr. Joel Hill.	Rowan	Dr. W. L. Crump.
Davie	Dr. M. D. Kimbrough.	Rutherford.....	Dr. T. B. Twitty.
Duplin	Dr. A. J. Jones.	Sampson	Dr. John A. Stevens.
Durham	Dr. N. M. Johnson.	Scotland	Dr. A. W. Hamer.
Edgecombe	Dr. W. J. Thigpen.	Stanly	Dr. V. A. Whitley.
Forsyth.....	Dr. W. O. Spencer.	Stokes	
Franklin	Dr. R. F. Yarborough.	Surry	Dr. John R. Woltz.
Gaston.....	Dr. H. F. Glenn.	Swain.....	Dr. A. M. Bennet.
Gates.....	Dr. W. O. P. Lee.	Transylvania	Dr. C. W. Hunt.
Graham	Dr. V. J. Brown.	Tyrrell.....	
Granville	Dr. S. D. Booth.	Union	Dr. John M. Blair.
Greene.....	Dr. W. B. Murphy, Jr.	Vance.....	Dr. H. H. Bass.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. J. L. McCullers.
Halifax	Dr. I. E. Green.	Warren.....	Dr. M. P. Perry.
Harnett.....	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. F. Abel.	Watauga.....	Dr. C. W. Phipps.
Henderson	Dr. J. G. Waldrop.	Wayne.....	Dr. Williams Spicer.
Hertford	Dr. C. F. Griffin.	Wilkes.....	Dr. W. P. Horton.
Hyde	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson.
Iredell	Dr. M. R. Adams.	Yadkin	Dr. T. R. Harding.
Jackson.....	Dr. R. L. Davis.	Yancey	Dr. J. L. Ray.
Johnston	Dr. Thel Hooks.		

BULLETIN

OF THE

NORTH CAROLINA BOARD OF HEALTH

Published Monthly at the Office of the Secretary of the Board, Raleigh, N. C.

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RICHARD H. LEWIS, M. D., <i>Secretary and Treasurer</i> , Raleigh.	

VOL. XIX.

OCTOBER, 1904.

No. 7.

DIPHTHERIA.

The diphtheria season is now here, and a few words to the public may be in place. Diphtheria is a communicable germ disease due to the presence in the circulation of toxins or soluble poisons excreted by *Bacillus diphtheriae*, whose local seat in human patients is in the throat. The germ of diphtheria was discovered in 1884 by two German biologists, Loeffler and Klebs, hence the germ is popularly called after their names.

The clinical symptoms of diphtheria are the formation in throat or on tonsils of a false membrane, and subsequently the development of symptoms of general poisoning, followed by paralysis of the muscles, especially those of the throat, eyes, heart and legs.

The isolation, by microscopic examination or culture methods, of the Klebs-Loeffler germ from throat exudates or from the false membrane is the surest and quickest means of diagnosing diphtheria. This diagnosis is very easily made when good samples of exudate are obtained from the throat. Such examinations are made free of charge for physicians in the laboratory of the State Board of Health at Raleigh.

The germ of diphtheria, when dried, possesses great powers of resistance. It may be found alive and virulent in the dust of a room in which a person sick with diphtheria had lived six months or more previously. This fact indicates the importance of thoroughly disinfecting all rooms and buildings in which cases of diphtheria have occurred before healthy persons, and more especially children, are permitted to inhabit them. The best available disinfectants for this use are 40 per cent. formaldehyde and sulphur fumes.

Formaldehyde, 40 per cent., can be bought of most druggists. To use this substance for disinfecting a room, for each 1,000 cubic feet of space take one pint. Add to this four times its volume of clear water and evaporate the whole over any kind of a heater, having first made the room as nearly air-tight as possible. Let room stay closed for at least twelve hours. This substance does not bleach colors nor in any way injure pictures or other articles usually found in homes.

If sulphur is used, take for each 1,000 cubic feet of space three pounds. Pour upon this a gill of alcohol and set fire to it, having first made the room air-tight. To insure safety against fire, place the sulphur in an iron pan or pot and float the latter vessel upon a large dish of water. Let the room remain closed for twelve hours. Sulphur fumes are liable to bleach colored cloths, paper and pictures. There are many "patent" germicides on the market, but most of these are worthless. There are no household disinfectants better or cheaper than the two just mentioned.

It must be remembered by all who have responsibility for diphtheritic patients that for some three or more weeks after all clinical symptoms of the disease have vanished the germs alive and virulent may still be found in the throat and sputum of patients. An attack of diphtheria renders the patient himself temporarily immune from further infection, but such patient may still infect healthy persons. The acquired immunity is only transient, lasting usually but a few weeks.

The following rules concerning diphtheria have been published by the National Conference of State and Provincial Boards of Health and adopted by the North Carolina Board, to-wit:

Resolved, That the isolation of any person affected with diphtheria or so-called laryngeal or membranous croup, and of the nurse or nurses attendant upon such person, shall be absolute and shall be governed by the following regulations:

1. Whenever the presence of the *Bacillus diphtherie* is in any manner reported by an approved bacteriologist, the house should forthwith be quarantined and a plainly printed notice thereof, including the name of the disease, should be posted in a conspicuous place thereon, and guards stationed if necessary.

2. It is the duty of the attending physician to report to the local health officer the names and addresses of those who have been exposed to diphtheria.

3. It is the duty of the attending physician or local health officer to take and forward to the laboratory of the State Board of Health, or other approved bacteriological laboratory, specimens from the throats of those exposed to diphtheria, and, pending a report thereon, to see that isolation is maintained.

4. After the laboratory diagnosis of diphtheria has been given, it shall be the duty of the health officer to see that specimens from both nose and throat of the patient are forwarded by himself or the attending physician to a laboratory approved by the State Board of Health, once a week

after clinical symptoms have subsided, until negative reports for both nose and throat are obtained.

GERALD MCCARTHY,

Biologist N. C. Board of Health.

Raleigh, N. C., October 10, 1904.

As appears under the head of Review of Diseases, the reports for September show diphtheria to have been present in thirty counties during that month, and we think it likely that it is still more prevalent at this time, though this opinion is not based on any official reports. At any rate, the disease is such a serious one that while it has not assumed the proportion of an epidemic except in the town of Gold-boro, we have thought it worth while to ask the publication by the press of the State of the above article by Dr. McCarthy, made short in order not to trespass too much upon their space, for the information of the people.

We would call attention to the simple method of disinfecting the room occupied by a diphtheria patient (equally applicable, of course, to any of the other contagious diseases) by generating formaldehyde gas through boiling the usual 40 per cent. solution in water, a certain quantity of water being added in order to increase the moisture in the air of the room, as the gas is more effective in the presence of water. The only practical difficulty in this method consists in furnishing a source of heat for the boiling that can with safety be left alone in the closed room. This difficulty can easily and satisfactorily be met by the use of an oil stove. In order to guarantee the heat until the whole of the solution is evaporated, care should be taken to see that the oil receptacle is full. It would also be well, before putting on the formaldehyde, to let the stove burn a little while as high as may be without smoking, and establish that point, as it is desirable to secure as rapid evaporation as possible.

Another matter we would direct attention to is the great importance of securing thorough disinfection after this disease, owing to the great powers of resistance of the germ when dried. As illustrating this, we recall hearing Dr. H. T. Bahnson, a former president of our Board, make the following statement at one of the meetings of the State Medical Society: A family with young children made a visit to relatives living in the country. While there one or more of the children had diphtheria and died. Three years afterwards the same family made another visit to the same house, occupying the same room. Before their visit was ended another child was attacked with diphtheria and died. The cause of this last case was clearly the presence of the germs left by the other cases three years before, since there was no diphtheria in the neighborhood from which the patient went, there had been no other case in the house in the meantime, and the disease was not present in the vicinity. It should be said also that the house visited was always kept unusually clean and neat. But ordinary cleaning will not

answer to destroy all the germs hidden away in crevices and corners; they must be reached by some agency that will positively kill them, and a germicidal gas is manifestly the thing.

No discussion of diphtheria would be complete without some reference to its antitoxin. As is well known to all up-to-date physicians, diphtheria antitoxin, if promptly used in sufficient quantity, may be justly called a specific remedy for the disease and as a preventive it is almost as certain as vaccination against small-pox. Unfortunately, it is a very expensive remedy, and municipalities and county sanitary committees should arrange to furnish it free of charge to those unable to buy it. As bearing on this subject, we quote, in conclusion, the following from Egbert's excellent work on Hygiene and Sanitation:

"That the antitoxin treatment is invaluable cannot be doubted. The statistics of Professor Welch, of Johns Hopkins Hospital, founded on a very large number of diphtheria cases, 'show an apparent reduction of case-mortality of 55.8 per cent.,' and where the application was made in the first three days of the disease the mortality was only 8.5 per cent. in over eleven hundred cases as against a mortality of 30 per cent. or higher under former methods of treatment. Another interesting report is that of the Chicago Department of Health for 1896. In that city in that year there were 2,436 cases of true diphtheria verified bacteriologically. The antitoxin was administered to 2,302 of these, with a resultant mortality of only 6.56 per cent., or 157 deaths. Moreover, 2,016 other persons exposed to the disease were inoculated with the antitoxin in order to immunize them, and of these only fourteen subsequently contracted the malady, and none died. Further comment seems unnecessary; but the statistics of the United States Census, showing a reduction of practically one-half in the death rate from this disease in the last decade, viz., from 70.1 to 35.4 per 100,000 in over one-third of the population of the whole country, is even more striking, especially as the gain must be attributed almost entirely to the adoption and use of the antitoxin. The results have been so positive, the advance so progressive, and any changes in the previous methods of treatment of the disease so slight as to preclude the possibility of doubt as to the wisdom of employing it both as a remedy and as a prophylactic."

REVIEW OF DISEASES FOR OCTOBER, 1904.

SEVENTY-SEVEN COUNTIES REPORTING.

Ninety-six counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of September the following diseases have been reported from the counties named:

MEASLES.—Chatham; Duplin, a few cases; Iredell, 20; Jones, many; Polk, 2; Sampson; Wake, 15; Yadkin—8 counties.

WHOOPING-COUGH.—Bertie, many; Burke, many; Caldwell, several; Catawba, 1; Clay, several; Forsyth, several; Gaston, several; Gates, 7; Graham, several; Greene, 1; Jones, epidemic; Martin, many; New Hanover, 6; Pitt, 3; Richmond, several; Rowan, 6; Rutherford, several; Union, 10; Wake, 11; Yadkin—20 counties.

SCARLATINA.—Buncombe, 1; Cumberland, 6 or 7; Durham, 1; Forsyth, 6; Gaston, several; Guilford, 2; Haywood, 6; Henderson, 1; Randolph, a few; Rowan, 2; Wilkes, 3—11 counties.

DIPHTHERIA.—Anson, 3; Bladen, 1; Cabarrus, 18; Carteret, 5; Chowan, 2; Craven, 3; Cumberland, 5; Forsyth; Franklin, 1; Gaston, several; Granville, 12; Guilford, 1; Haywood, 14; Iredell, 6; Johnston, 2; Mecklenburg; Mitchell, 4; New Hanover, 8; Northampton, 1; Pasquotank; Pender, a few; Perquimans, 2; Randolph, 2; Sampson, many; Stanly, 31; Surry, 2; Union, 4; Warren, 1; Wayne, a great many; Wilkes, 10—30 counties.

TYPHOID FEVER.—Alamance, 5; Anson, several; Ashe, 7; Bertie, several; Bladen, 3; Burke, 3; Cabarrus, 1; Caldwell, in most parts; Camden, 1; Chatham; Chowan, several; Clay, 5; Cleveland, a few; Columbus, 10; Cumberland, in all parts; Currituck; Davidson; Duplin, a few; Durham, 14; Edgecombe, a few; Forsyth, several; Franklin, several; Gaston, several; Gates, 1; Graham, 1; Granville, 2; Greene, 12; Guilford, 6; Halifax; Harnett, a few; Haywood, 5; Henderson, a few; Hertford, a few; Iredell, 8; Johnston, several; Jones, 1; Lincoln, 8; McDowell, 10; Martin, many; Mecklenburg; Mitchell, 8; Nash, 12; New Hanover, 3; Northampton, many; Pasquotank; Perquimans, 3; Person, a few; Pitt, 4; Randolph, several; Richmond, 8 or 10; Robeson, a few; Rowan, 4; Rutherford, 6; Sampson, a few; Scotland, a few; Stanly; Surry, 8; Union, 30; Warren, 1; Washington, 1; Wayne, a few; Wilkes, 12; Yadkin, in several parts; Yancey, several cases—64 counties.

MALARIAL FEVER.—Bertie, in all parts; Brunswick; Camden; Chowan, in all parts; Columbus; Craven; Cumberland; Davie; Duplin; Gaston; Gates, 29; Halifax; Hyde; Johnston, in all parts; Jones, 15; Lincoln; Nash; New Hanover, in all parts; Northampton; Pender; Perquimans; Person, a few; Randolph; Richmond; Sampson, a few; Warren; Washington; Wayne; Yadkin—29 counties.

MALARIAL FEVER, PERNICIOUS.—Cumberland, 1; Hertford, 3; Northampton, 2.

MALARIAL FEVER, HEMORRHAGIC.—Bertie; Craven; Hyde, 8, "There have been more cases of hemorrhagic fever in Fairfield township than

ever before known: I believe it is largely due to flooding rice"; Nash; Perquimans; Washington; Wayne—7 counties.

MUMPS.—Clay; Sampson, many cases.

PNEUMONIA.—Surry, a few.

TONSILLITIS.—Buncombe; Duplin; Hertford.

VARICELLA.—Yadkin.

SMALL-POX.—Ashe, 1; Cabarrus, 1; Chatham, 7; Durham, 4; Greene, 3; Haywood, 4; Henderson, 17; Mecklenburg, 5; Mitchell, 6; New Hanover, 2; Pitt, 6; Sampson, 4; Wake, 1; Wayne, several; Wilkes, 3—15 counties.

CHOLERA, IN HOGS.—Bertie; Duplin; Forsyth; Northampton.

HYDROPHOBIA.—Richmond, "a rabid dog bit six persons, most of whom are receiving Pasteur treatment."

No diseases reported from Moore and Wilson.

No reports received from Alexander, Alleghany, Beaufort, Caswell, Cherokee, Dare, Jackson, Lenoir, Macon, Madison, Montgomery, Onslow, Orange, Pamlico, Rockingham, Stokes, Swain, Vance and Watauga.

SUMMARY OF MORTUARY REPORTS FOR SEPTEMBER, 1904.

TWENTY-FOUR TOWNS.

	White.	Colored.	Total.
Aggregate population	87,400	61,600	149,000
Aggregate deaths	126	152	278
Representing temporary annual death rate per 1,000	17.3	29.6	22.3
<i>Causes of Death.</i>			
Typhoid fever	7	7	14
Scarlet fever	1	0	1
Malarial fever	4	13	17
Diphtheria	1	1	2
Pneumonia	3	4	7
Consumption	16	21	37
Brain diseases	5	7	12
Heart diseases	6	12	18
Neurotic diseases	3	6	9
Diarrheal diseases	26	25	51
All other diseases	50	51	101
Accident	4	3	7
Violence	0	2	2
	<hr/> 126	<hr/> 152	<hr/> 278
Deaths under five years	43	64	107
Still-born	15	15	30

Mortuary Report for September, 1904.

TOWNS AND REPORTERS	RACES.	POPULATION.		TEMPORARY ANNUAL DEATH-RATE PER 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neuritic Diseases.	Diarrhoeal Diseases.	All other Diseases.	Accident.	Suicide.	Violence.	TOTAL DEATHS, Deaths under five years, Still-born.				
		By Races.	Total.	By Races.	Total.																	By Races.	By Towns.	Deaths under five years.	Still-born.	
Charlotte	W.	11,000		8.7																		8	19	3	4	
Dr. F. O. Hawley.	C.	7,200	18,200	18.3	12.5	1		1					2		1			6				11	2	3		
Durham	W.	8,000		31.5		2	1						2	2			6	5	1			21	44	10	1	
Dr. N. M. Johnson.	C.	5,000	13,000	55.2	40.6							1	5	1			5	9				23	4	12		
Edenton	W.	1,200		20.6									1									2	4	1		
Dr. T. J. Hoskins.	C.	1,800	3,000	13.3	16.0								1					1				2				
Elizabeth City	W.	5,000		2.4										1								1	13		1	
Dr. I. Fearing.	C.	3,000	8,000	48.0	19.5									1	3		3	5				12	5			
Fayetteville	W.	2,500		28.0		1							1				1	2				5	11	2		
Dr. A. S. Rose.	C.	2,300	4,800	31.3	27.5			1					2	1	1			1				6				
Goldsboro	W.	3,500		17.1		1		1					1				1	2				5	12	2	2	
Robt. A. Creech, H. O.	C.	2,600	6,100	32.3	23.6			1	1				1				4					7	4	1		
Greensboro	W.	6,100		9.8									1					2	2			5	15	1	1	
Jno. S. Michaux, C. C.	C.	4,000	10,100	30.0	17.8							1	1	1	1		2	2	2			10		2		
Henderson	W.	2,100		11.4													1	1				2	6			
Dr. John H. Tucker.	C.	1,700	3,800	28.2	18.9									1			1	2				4				
Laurinburg	W.	900		0.0																		0	1			
Dr. G. D. Everington.	C.	600	1,500	20.0	8.0	1																				
Marion	W.	800		60.0		1											1	2				4	4			
Dr. B. L. Ashworth.	C.	400	1,200	0.0	40.0																	0				
Monroe	W.	1,850		12.9													1	1				2	3			
Dr. Jno. M. Blair.	C.	600	2,450	20.0	24.7	1																1				
Oxford	W.	1,250		0.0																		0	0			
Dr. S. D. Booth.	C.	1,200	2,450	0.0	0.0																					
Raleigh	W.	8,000		22.5									2				3	9	1			15	24	3	1	
T. P. Sale, Clerk B. H.	C.	5,800	13,800	18.6	20.8	1							1	1	1		1	4				9	4	2		
Rocky Mount	W.	2,000		18.0													1	1				3	5			
Dr. J. T. Shubrick.	C.	1,200	3,200	20.0	18.7								1		1							2				
Salem	W.	3,300		14.5														4				4	5	1		
S. E. Butner, Supt. H.	C.	350	3,650	34.3	16.4													1				1				
Salisbury	W.	3,900		27.7									2				3	4				5	14	2		
Dr. H. T. Trantham.	C.	2,500	6,400	24.0	26.2			3										2								
Southport	W.	900		0.0																		0	0		1	
Dr. D. I. Watson.	C.	500	1,400	0.0	0.0																					
Tarboro	W.	2,000		0.0																		0	4	3		
Dr. Wm. J. Thigpen.	C.	500	2,500	96.0	19.2								1	1				2								
Wadesboro	W.	1,000		12.0													1					1	2			
Dr. J. H. Bennett.	C.	700	1,700	17.1	14.1																					
Waynesville	W.	1,600		0.0																		0	0			
Dr. Thos. Stringfield.	C.	400	2,000	0.0	0.0																	0				
Weldon	W.	700		0.0									1					1				3	3			
J. T. Gooch, Mayor.	C.	750	1,450	48.0	24.8																					
Wilmington	W.	10,000		28.8				4					2	4	1	2	4	6	1			24	56	11		
Dr. Chas. T. Harper.	C.	11,000	21,000	34.9	32.0	1		5					1	2	2	2	6	6	6			1	32	56	21	6
Wilson	W.	3,800		15.8														1	4			5	18	8		
Dr. W. S. Anderson.	C.	3,000	6,800	52.0	31.8			2					1				4	6				13				
Winston	W.	6,000		20.0		2							3	1	1		3					10	5	3	5	
Dr. J. L. Hanes.	C.	4,500	10,500	13.2	17.1								2				3					5	15	2		

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

*One non-resident, white, died of consumption.

County Superintendents of Health.

Alamance	Dr. H. R. Moore.	Jones.....	Dr. N. G. Shaw.
Alexander	Dr. C. J. Carson.	Lenoir	Dr. C. L. Pridgen.
Alleghany	Dr. Robt. Thompson.	Lincoln	Dr. John W. Saine.
Anson	Dr. J. H. Bennett.	McDowell	Dr. B. L. Ashworth.
Ash.....	Dr. Manley Blevins.	Macon	Dr. W. A. Rogers.
Beaufort	Dr. D. T. Tayloe.	Madison	Dr. W. J. Weaver.
Bertie	Dr. H. V. Dunstan.	Martin	Dr. W. H. Harrell.
Bladen.....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin.
Brunswick	Dr. J. Arthur Doshier.	Mitchell.....	Dr. Virgil R. Butt.
Buncombe	Dr. D. E. Sevier.	Montgomery	Dr. M. P. Blair.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod.
Cabarrus.....	Dr. R. S. Young.	Nash	Dr. J. P. Battle.
Caldwell	Dr. W. P. Ivey.	New Hanover	Dr. W. D. McMillan.
Camden.....	Dr. J. L. Lister.	Northampton.....	Dr. H. W. Lewis.
Carteret	Dr. F. M. Clarke.	Onslow.....	Dr. E. L. Cox.
Caswell	Dr. S. A. Malloy.	Orange.....	Dr. C. D. Jones.
Catawba	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. T. A. Kirkman.	Pasquotank	Dr. J. B. Griggs.
Cherokee.....	Dr. B. B. Meroney.	Pender.....	Dr. R. J. Williams.
Chowan.....	Dr. T. J. Hoskins.	Perquimans.....	Dr. C. C. Winslow.
Clay	Dr. P. B. Killian.	Person	Dr. J. A. Wise.
Cleveland	Dr. B. H. Palmer.	Pitt.....	Dr. Zeno Brown.
Columbus.....	Dr. N. A. Thompson.	Polk	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph	Dr. W. J. Moore.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. F. J. Garrett.
Currituck	Dr. H. M. Shaw.	Robeson	Dr. H. T. Pope.
Dare	Dr. W. B. Fearing.	Rockingham	Dr. Sam Ellington.
Davidson.....	Dr. Joel Hill.	Rowan	Dr. W. L. Crump.
Davie.....	Dr. M. D. Kimbrough.	Rutherford.....	Dr. T. B. Twitty.
Duplin	Dr. A. J. Jones.	Sampson	Dr. John A. Stevens.
Durham	Dr. N. M. Johnson.	Scotland	Dr. A. W. Hamer.
Edgecombe	Dr. W. J. Thigpen.	Stanly.....	Dr. V. A. Whitley.
Forsyth.....	Dr. W. O. Spencer.	Stokes	
Franklin	Dr. R. F. Yarborough.	Surry	Dr. John R. Woltz.
Gaston.....	Dr. H. F. Glenn.	Swain.....	Dr. A. M. Bennet.
Gates.....	Dr. W. O. P. Lee.	Transylvania	Dr. C. W. Hunt.
Graham	Dr. V. J. Brown.	Tyrrell.....	
Granville	Dr. S. D. Booth.	Union	Dr. John M. Blair.
Greene.....	Dr. W. B. Murphy, Jr.	Vance.....	Dr. H. H. Bass.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. J. L. McCullers.
Halifax	Dr. I. E. Green.	Warren.....	Dr. M. P. Perry.
Harnett.....	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. F. Abel.	Watauga.....	Dr. C. W. Phipps.
Henderson	Dr. J. G. Waldrop.	Wayne.....	Dr. Williams Spicer.
Hertford	Dr. C. F. Griffin.	Wilkes.....	Dr. W. P. Horton.
Hyde	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson.
Iredell	Dr. M. R. Adams.	Yadkin	Dr. T. R. Harding.
Jackson.....	Dr. R. L. Davis.	Yancey	Dr. J. L. Ray.
Johnston	Dr. Thel Hooks.		

BULLETIN

OF THE

NORTH CAROLINA BOARD OF HEALTH

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VOL. XIX.

NOVEMBER, 1904.

No. 8.

WOMAN'S DUTY TOWARD THE HEALTH OF THE NATION.*

BY S. A. KNOPF, M. D., NEW YORK.

The American woman should find her highest and noblest mission in helping to increase the nation's health. Her first duty is to familiarize herself with the status of the health of the nation of which she is an integral member. She will learn that thousands of useful citizens, of men, women and children, die annually from preventable diseases, such as tuberculosis, diphtheria, small-pox, alcoholism, etc., that in the State of Massachusetts alone 4,531 died of tuberculosis last year, and that of the 80,000,000 now peopling the United States nearly 10,000,000 will die of this disease if the present ratio is kept up.

With the increase of the health of the nation there will be invariably a concomitant betterment of the physical condition of men and women in general, an increase in moral, intellectual and monetary wealth.

Women in nearly all phases of life can aid in this labor toward the improvement of the nation's health—one more, another less—but all can help. Individually they can help by furthering their own health by healthful dress, healthful food and a simple life. Garments constricting chest and abdomen, hindering the body's physiological functions, must be done away with. Of tight shoes and neck-wear the same must be said, for by their constricting influence they hinder the free circulation of the

* A synopsis of an address delivered by invitation before a meeting of the Massachusetts State Federation of Women's Clubs, at Lowell, Mass., October 27, 1904.

blood. Mothers should, if at all possible, nurse their children themselves, and artificial feeding during the first year should only be resorted to in the rarest instances. To learn to select and to cook good, healthful food, every wife and mother should consider one of her most graceful accomplishments.

To live a simple life does not mean to abandon the comforts of modern civilization, to ignore the blessings of modern science, and particularly of modern medicine. It only means to live less artificially, more in accordance with physiological, *i. e.*, natural laws, and obey the lessons modern science and preventive medicine have taught us. Thus, instead of giving her adherence to all sorts of fads, some of them denying the existence of disease and proclaiming the uselessness of preventive medicine, hygiene and the laws of cleanliness, which are the laws of God, the American mother should combat such dangerous doctrines by word of mouth or pen, and, above all, by example. By leading a simpler life she will no longer be "nervous," or neurasthenic, and consequently will not have to resort to the patent medicines, headache powders and nerve tonics advertised in the daily and not infrequently in even religious papers. These remedies are often thoughtlessly recommended by clergymen and statesmen who are totally unaware of the often dangerous ingredients of such remedies.

Small-pox, diphtheria and tuberculosis, all eminently infectious diseases, are treated by so-called Christian Scientists as delusions, and no precautions are taken to protect others, not even the innocent children. Instead of joining anti-vaccination leagues, the American woman should plead for universal vaccination laws. This in view of the fact that in European countries and in States of the Union where vaccination is compulsory small-pox has almost disappeared, whereas it continues to exist epidemically and occasionally ravages whole districts where universal vaccination is not practiced—that is to say, where it is restricted to those who voluntarily submit themselves to the trifling and harmless operation.

Some well-meaning but misguided persons protest against the use of antitoxine in diphtheria because they suppose that its production causes pain to the animal which is used for that purpose, or they go still further, protesting because in experimenting with antitoxine hundreds of innocent little rabbits and guinea-pigs have been "tortured." These people call themselves anti-vivisectionists. Leaving aside that scientific experimenters never purposely torture animals, that the horses from which antitoxine is produced do not suffer, let these good people remember that it is to the experiments on a few hundred guinea-pigs and rabbits that the discovery of antitoxine is due, and that in consequence the mortality from diphtheria has been reduced from seventy or seventy-five per cent. to five or six per cent. This means that ninety-four to ninety-five American children are saved out of every one hundred instead of twenty-five or thirty. Let every American mother remember these facts

when she is asked to aid so misguided a mission as one protesting against scientific and humane vivisection.

Tuberculosis, the great white plague, which was formerly regarded as a hopelessly incurable disease, has, thanks to the work of modern scientific medicine, become the most preventable and curable of all infectious chronic diseases. Here, perhaps more than in any other disease, can the American woman be helpful. Let her join every movement which has for its purpose to prevent promiscuous spitting (the main source of the spread of tuberculosis) indoors, in public conveyances, or even on sidewalks. Let her protest against trailing dresses on the sidewalk by example and word, by mouth or pen. Trailing skirts are filth and disease collectors; they do the scavenger's dirty work and transport not infrequently disease-producing dirt into the homes of their wearers.

Let the American woman join local anti-tuberculosis associations, or form such if they do not yet exist in her community. These associations are for the purpose of spreading the knowledge of how to prevent and cure tuberculosis, of looking after the consumptive poor, and inducing noble-minded and generous people to help to provide medical aid and, whenever possible, sanatorium treatment for pulmonary invalids. It is there that the poor consumptive has the best possible care and that he has often as much as seventy-five to eighty per cent. of chance of absolute and lasting cure.

Another duty of anti-tuberculosis associations is to visit consumptives at their homes and to strive to improve the hygienic condition there, and, while everywhere preaching the need of precaution against the careless deposit of sputum, every member can teach the unduly alarmed people that the careful consumptive is as safe an individual to associate with as any one else, and that phthisiophobia (exaggerated fear of the presence of the consumptive) is cruel and inhumane.

Many women have chosen as a profession that sublime calling of teacher of children. By working hand in hand with the school physician and superintendent, the public school-teacher can do more than any one else in the prevention of the spread of many of the contagious children's diseases. School boards, superintendents and teachers can, by arranging a judicious curriculum, prevent the overtaxing of the child's brain and nervous system to the detriment of its physical development. By studying, practicing and teaching the fundamental rules of the prevention of tuberculosis, such as cleanliness, free ventilation and love for fresh air and sunlight and good and healthful food, the public teacher can do more toward the combat of tuberculosis as a disease of the masses than perhaps any other individual.

Alcoholism, the curse of our nation, often the fore-runner of tuberculosis and other infectious diseases, more frequently of crime, poverty and insanity, is a disease well worth while for the woman to study and combat. It must be evident that alcoholism, treated as a disease and not as a crime, cannot be combated by fanatical laws or prosecution, yet

women can and should do much toward the possible eradication of this disease of diseases.

Here again she must begin with herself, her own home, her own children, her own husband, her own friends. If she herself is addicted, let her strive to master it; if she does not succeed by will power, let her not have recourse to advertised and mysterious "sure-cure" medicines, but consult a competent physician. For let it be known that many of the so-called "anti-alcoholic remedies" have a very large percentage of alcohol and often morphine or cocaine; this also holds good of many of the so-called nerve and stomach remedies. The long-continued use of certain patent medicines which are advertised as non-alcoholic has not infrequently made an habitual drunkard or a person addicted to morphine.

The use of any patent medicine the constituents of which are unknown must always be dangerous, and American women have here a field for reform. Millions of dollars are spent annually for patent medicines, nostrums and quack remedies, often uselessly, more often producing incalculable and irreparable harm.

Parents should know that unless they master a desire for alcohol they may transmit this morbid longing to their children. Let them be on guard to protect their sons and daughters from such a fate. Let the mother begin with this early. No soothing syrup with unknown ingredients should be used for her babies; no alcohol ever introduced in her household. She should warn her children, as soon as their intelligence permits, of the danger they are exposed to. Let her impress upon her boy that he can be a man, and a true gentleman, though he forever refuses to go into a saloon to be "treated" or to "treat"; for, alas! it is the "treating" habit among the male population of our country which has made of many a hopeful young man a miserable drunkard.

What shall the woman do, poor or rich, whose husband is inclined to the excessive use of alcohol? Let her make her home as attractive as possible, her meals as appetizing as the best cooking can possibly make them. If he desires a glass of wine or of beer with his meals, let her keep these articles at her home. Alcohol diluted in the form of beer or wine, taken in moderate quantities with meals, is not injurious.

Let the American woman support all movements which tend to improve the moral, physical and intellectual standard of the nation. Let her, with all her might, combat child labor, which still disgraces many of our States. Massachusetts, which was for many years the leading State in the Union in the care of its children, has recently lost that proud pre-eminence. Colorado, Illinois and New York have now better laws concerning child labor. Let the women join rational movements which tend to combat intemperance and excesses of all kinds.

Let the woman of culture and refinement teach her less fortunate sister the art of cooking and housekeeping, so that the home of the ordinary laborer, too, may be made more attractive, and the saloon will

cease to be a temptation to him. Let the woman of wealth and influence help to create better and healthier tenements for the poor, more parks and play-grounds for the children, healthful places of amusement for old and young, where the honest laboring man may take his wife and children on a Sunday afternoon and partake of non-alcoholic or only lightly alcoholic drinks with his repast. Thus the saloon and intemperance will lose their charm and alcoholism and its fearful consequences will gradually disappear.

Broader education, heroic examples, self-sacrifice, much work and a great deal of devotion are necessary to the American woman if she wishes to do her whole duty toward the health of the nation.—*New York Medical Journal*.

A SCHEME TO INDUCE GENERAL VACCINATION.

In *Public Health Reports*, September 30, 1904, published by the United States Public Health and Marine Hospital Service, a full account of a scheme for the encouragement of inoculation for the restriction of the plague in Bombay, India, set forth in a letter signed by the chairman and secretary of the Bombay Chamber of Commerce. Modified to fit the conditions relative to vaccination for the prevention of small-pox, it would be somewhat as follows: The principle is that a reward be given to each person vaccinated who induces four other persons to be vaccinated. For a very small sum four coupons are issued to each person vaccinated; as soon as four other persons are vaccinated who present these four coupons, a reward is paid to the person who originally purchased the coupons. The reward paid is perhaps four times as much as was first received for the coupons. Each of the four persons vaccinated receives a set of four coupons, and the process thus continues in a geometrical ratio to widen its sphere of influence.—*Ibid*.

REVIEW OF DISEASES FOR OCTOBER, 1904.

EIGHTY COUNTIES REPORTING.

Ninety-six counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of October the following diseases have been reported from the counties named:

MEASLES.—Burke, several; Chatham; Duplin, a few; Durham, a few; Gates, 40; Hertford, many; Iredell, 8; Martin, many; New Hanover, 3; Robeson, 1; Rutherford, 1; Wake, 12; Yadkin—13 counties.

WHOOPING-COUGH.—Bertie, several; Burke, many; Caldwell; Caswell, 100; Clay, 20; Durham, a few; Graham, several; Halifax, 2; Hertford, several; Jones, many; Macon, in all parts; Martin, many; Mecklenburg; Orange, a few; Richmond, a few; Rockingham; Rowan, 10; Rutherford, a few; Swain, several; Vance, in all parts; Wake, 2; Warren, a few; Yadkin—23 counties.

SCARLATINA.—Cleveland, a few; Cumberland, 4; Durham, 6; Forsyth, several; Gaston, 2; Graham, 1; Guilford, 1; Henderson, 1; Lincoln, 1; New Hanover, 1; Rockingham, mild cases in all parts; Rowan, 2; Surry, 2—13 counties.

DIPHTHERIA.—Alamance, 4; Alleghany, 2; Bertie, 1; Cabarrus, 4; Caldwell, several; Carteret, 3; Caswell, 5; Chatham; Craven, 6; Cumberland, 4; Currituck, 1; Durham, 1; Edgecombe, 5; Forsyth, several; Franklin, 1; Gaston, 4; Granville, 18; Greene, 4; Guilford, 5; Halifax, 1; Iredell, 5; Johnston, 3; Jones, 35; Lenoir, 6; Martin, 1; Mecklenburg; Mitchell, many; New Hanover, 18; Northampton, 6; Pender, a few; Robeson, 3; Sampson; Stanly, 10; Surry, 4; Union, 3; Wake, 11; Wayne, a great many; Wilkes, 4; Wilson, 17—39 counties.

TYPHOID FEVER.—Alamance, 5; Alleghany, 1; Bertie, 1; Brunswick; Cabarrus, 2; Caldwell, many; Caswell, 2; Catawba, 2; Chatham; Clay, 3; Cleveland, a few; Craven, 5; Cumberland, in all parts; Davidson; Duplin, a few; Durham, 4 or 5; Edgecombe, a few; Forsyth, many; Franklin, 10 or 15; Gaston, several; Graham, 1; Granville, 2; Greene, 6; Guilford, 2; Halifax, 3; Harnett, a few; Henderson, 5; Hertford, 10; Johnston, several; Jones, 4; Lincoln, 2; McDowell, 6; Macon, 6; Madison, in all parts; Martin, several; Mecklenburg; Mitchell, many; Nash, 3; New Hanover, 5; Northampton, several; Orange, 3; Pasquotank; Pender; Randolph; Richmond; Robeson; Rockingham, a few; Rowan, 7; Rutherford, 8; Sampson; Scotland, a few; Stanly; Surry, 4; Swain, 1; Union, 10; Wake, 15; Warren, 1; Wayne, several; Wilkes, 5; Yadkin; Yancey—61 counties.

MALARIAL FEVER.—Bertie, general; Caswell; Craven; Cumberland, general; Currituck; Davie, general; Edgecombe; Gaston, general; Gates, 6; Halifax; Hyde; Johnston; Lincoln; Nash; New Hanover; Northampton; Pamlico, general; Pasquotank; Pender; Randolph; Richmond; Robeson; Sampson; Washington, general—24 counties.

MALARIAL FEVER, PERNICIOUS.—Edgecombe, 2; Pamlico.

MALARIAL FEVER, HEMORRHAGIC.—Craven, 1; Hyde, 4; Nash, 2; New Hanover, 1; Northampton, 3; Pamlico, 3; Pender, 1; Washington, 1—8 counties.

INFLUENZA.—Caswell; Macon; Person; Randolph.

PNEUMONIA.—Alleghany; Clay, 4; Edgecombe; Graham, 1; Person; Transylvania, a few; Yadkin—7 counties.

VARICELLA.—Randolph.

SMALL-POX.—Cabarrus, 6; Chatham, 7; Durham, 1; Forsyth, 11; Greene, 150; Henderson, 28; Mitchell, 3; New Hanover, 4; Robeson, 1; Rutherford, 8; Sampson, 2; Scotland, a few; Union, 12; Wake, 5; Wayne, 5; Wilkes, 1—16 counties.

CHOLERA, IN FOWLS.—Washington.

CHOLERA, IN HOGS.—Bertie, Duplin, Forsyth, Pamlico, Washington.

No diseases reported from Anson, Buncombe, Camden and Polk.

No reports received from Alexander, Ashe, Beaufort, Bladen, Cherokee, Chowan, Columbus, Dare, Haywood, Jackson, Montgomery, Moore, Onslow, Pitt and Watauga.

SUMMARY OF MORTUARY REPORTS FOR OCTOBER, 1904.

TWENTY-FIVE TOWNS.

	White.	Colored.	Total.
Aggregate population	87,800	61,300	149,100
Aggregate deaths	113	137	250
Representing temporary annual death rate per 1,000	15.4	26.8	20.1
<i>Causes of Death.</i>			
Typhoid fever	3	9	12
Scarlet fever	2	0	2
Malarial fever	7	8	15
Diphtheria	9	3	12
Whooping-cough	1	2	3
Measles	0	1	1
Pneumonia	4	5	9
Consumption	7	21	28
Brain diseases	9	8	17
Heart diseases	7	8	15
Neurotic diseases	2	3	5
Diarrhœal diseases	8	12	20
All other diseases	47	53	100
Accident	6	3	9
Violence	1	1	2
	113	137	250
Deaths under five years	33	48	81
Still-born	8	16	24

Mortuary Report for October, 1904.

TOWNS AND REPORTERS.	RACES.	POPULATION.		TEMPORARY ANNUAL DEATH-RATE PER 1,000.																TOTAL DEATHS.		Still-born.			
		By Races.	Total.	By Races.	Total.	Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrheal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.		By Races.	By Towns.	Deaths under five years.
Charlotte	W.	11,000		14.2			1						1	1				8	2			13	26	6	3
Dr. F. O. Hawley.	C.	7,200	18,200	21.7	16.6							1	4		2		6					13	5	4	
Durham	W.	8,000		6.0					1					1			1	1				4	17	3	1
Dr. N. M. Johnson.	C.	5,000	13,000	31.2	15.7	1		1				1	2	1			6	1				13	7		
Edenton	W.	1,200		10.0					1													1	1		
Dr. T. J. Hoskins.	C.	1,800	3,000	0.0	4.0																	0			
Elizabeth City	W.	5,000		9.6		1	2									1						4	9	2	
Dr. I. Fearing.	C.	3,000	8,000	20.0	13.5									1	1		1	2				5		2	1
Fayetteville	W.	2,500		9.6				1						1								2	7		1
Dr. A. S. Rose.	C.	2,300	4,800	26.1	17.5			1						1			1	2				5			
Goldsboro	W.	3,500		27.4				3						2	1							8	14	4	
Robt. A. Creech, H. O.	C.	2,600	6,100	27.7	27.5	1		2				1					2					6			
Greensboro	W.	6,100		13.8				1	1			1	1				3					7	18	3	
Jno. S. Michaux, C. C.	C.	4,000	10,100	33.0	21.4	3						2	1	1			1	3				11		3	
Henderson	W.	2,100		11.4												1						1	2	6	
Dr. John H. Tucker.	C.	1,700	3,800	28.2	18.9	1							3									4			
Laurinburg	W.	900		66.7														5				5	6		1
Dr. G. D. Everington.	C.	600	1,500	20.0	48.0												1					1			1
Lenoir	W.	1,600		52.5		2		1						1		1	2					7	8	1	
Dr. S. W. Shell.	C.	400	2,000	30.0	48.0								1									1			
Lexington	W.	800		15.0														1				1	1		
J. H. Moyer, Mayor.	C.	500	1,300	0.0	9.2																	0			
Marion	W.	800		15.0														1				1	1		
Dr. B. L. Ashworth.	C.	400	1,200	0.0	10.0																	0			
Monroe	W.	1,850		6.5														1				1	2		
Dr. Jno. M. Blair.	C.	600	2,450	20.0	9.8								1									1			
Oxford	W.	1,250		19.2										1				1				2	4	1	
Dr. S. D. Booth.	C.	1,200	2,450	20.0	19.5													2				2			
Raleigh	W.	8,000		19.5				1				1	1	1			2	6	1			13	26		
T. P. Sale, Clerk B. H.	C.	5,800	13,800	26.9	22.6							1		3			1	7				113			
Salem	W.	3,300		10.9														2				3	3	2	
S. E. Butner, Supt. H.	C.	350	3,650	0.0	9.8																	0			
Salisbury	W.	3,900		18.5								2					1	1	2			6	10		
Dr. H. T. Trantham.	C.	2,500	6,400	19.2	18.7								1	2				1				4			
Southport	W.	900		0.0																		0	3		
Dr. D. I. Watson.	C.	500	1,400	72.0	25.7												3					3		1	1
Tarboro	W.	2,000		30.0									1	1	1			2				5	6	3	
Dr. Wm. J. Thigpen.	C.	500	2,500	24.0	28.8												1					1			
Wadesboro	W.	1,000		24.0									1					1				2	4		1
Dr. J. H. Bennett.	C.	700	1,700	34.3	28.2												1	1				2			
Waynesville	W.	1,600		7.5									1									1	1		
Dr. Thos. Stringfield.	C.	400	2,000	0.0	6.0																	0			
Weldon	W.	700		0.0																		0	3		
J. T. Gooch, Mayor.	C.	750	1,450	48.0	24.8	1											2					3		1	
Wilmington	W.	10,000		25.2			3	2				1	3		1	1	1	1				21	48	6	1
Dr. Chas. T. Harper.	C.	11,000	21,000	29.4	27.6		6					2	1		1	2	4	10	1			27	13	8	
Wilson	W.	3,800		6.3								1							1			2	5		
Dr. W. S. Anderson.	C.	3,000	6,800	12.0	8.8			1									1	1				3			
Winston	W.	6,000		4.0		1											1					2	21	2	
Dr. J. L. Hanes.	C.	4,500	10,500	50.7	24.0	2			2	1		5	2		2		3	3	1			19		8	1

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

County Superintendents of Health.

Alamance	Dr. H. R. Moore.	Jones.....	Dr. N. G. Shaw
Alexander	Dr. C. J. Carson.	Lenoir	Dr. C. L. Pridgen.
Alleghany	Dr. Robt. Thompson.	Lincoln	Dr. John W. Saine.
Anson	Dr. J. H. Bennett.	McDowell	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon	Dr. W. A. Rogers.
Beaufort	Dr. D. T. Tayloe.	Madison	Dr. W. J. Weaver.
Bertie	Dr. H. V. Dunstan.	Martin	Dr. W. H. Harrell.
Bladen.....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin.
Brunswick	Dr. J. Arthur Doshier.	Mitchell.	Dr. Virgil R. Butt.
Buncombe	Dr. D. E. Sevier.	Montgomery	Dr. M. P. Blair.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod
Cabarrus.....	Dr. R. S. Young.	Nash	Dr. J. P. Battle.
Caldwell	Dr. W. P. Ivey.	New Hanover	Dr. W. D. McMillan.
Camden.....	Dr. J. L. Lister.	Northampton.....	Dr. H. W. Lewis.
Carteret	Dr. F. M. Clarke.	Onslow.....	Dr. E. L. Cox.
Caswell.....	Dr. S. A. Malloy.	Orange.....	Dr. C. D. Jones.
Catawba	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. T. A. Kirkman.	Pasquotank	Dr. J. B. Griggs.
Cherokee.....	Dr. B. B. Meroney.	Pender.....	Dr. R. J. Williams
Chowan.....	Dr. T. J. Hoskins.	Perquimans.....	Dr. C. C. Winslow
Clay.....	Dr. P. B. Killian.	Person	Dr. J. A. Wise.
Cleveland	Dr. B. H. Palmer.	Pitt.....	Dr. Zeno Brown.
Columbus.....	Dr. N. A. Thompson.	Polk	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph	Dr. W. J. Moore.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. F. J. Garrett.
Currituck.....	Dr. H. M. Shaw.	Robeson	Dr. H. T. Pope.
Dare.....	Dr. W. B. Fearing.	Rockingham	Dr. Sam Ellington.
Davidson.....	Dr. Joel Hill.	Rowan.....	Dr. W. L. Crump.
Davie.....	Dr. M. D. Kimbrough.	Rutherford.....	Dr. T. B. Twitty.
Duplin.....	Dr. A. J. Jones.	Sampson	Dr. John A. Stevens.
Durham	Dr. N. M. Johnson.	Scotland	Dr. A. W. Hamer.
Edgecombe	Dr. W. J. Thigpen.	Stanly.....	Dr. V. A. Whitley.
Forsyth.....	Dr. W. O. Spencer.	Stokes	
Franklin	Dr. R. F. Yarborough.	Surry	Dr. John R. Woltz.
Gaston.....	Dr. H. F. Glenn.	Swain.....	Dr. A. M. Bennet.
Gates.....	Dr. W. O. P. Lee.	Transylvania	Dr. C. W. Hunt.
Graham	Dr. V. J. Brown.	Tyrrell.....	
Granville	Dr. S. D. Booth.	Union	Dr. John M. Blair.
Greene.....	Dr. W. B. Murphy, Jr.	Vance.....	Dr. H. H. Bass.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. J. L. McCullers
Halifax	Dr. I. E. Green.	Warren.....	Dr. M. P. Perry.
Harnett.....	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. F. Abel.	Watauga.....	Dr. C. W. Phipps.
Henderson	Dr. J. G. Waldrop.	Wayne.....	Dr. Williams Spicer.
Hertford	Dr. C. F. Griffin.	Wilkes.....	Dr. W. P. Horton.
Hyde.....	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson.
Iredell	Dr. M. R. Adams.	Yadkin	Dr. T. R. Harding.
Jackson.....	Dr. R. L. Davis.	Yancey	Dr. J. L. Ray.
Johnston	Dr. Thel Hooks.		

[You are asked to fill out and mail one of these forms to the Superintendent of Health of your county on or before the third of each month, that he may use it in making his report to the Secretary of the State Board.]

Have any of the following diseases occurred in your practice during the month just closed. If so, state number of cases.

Whooping-cough ----- Typhoid Fever -----

Measles ----- Typhus Fever -----

Diphtheria ----- Yellow Fever -----

Scarlet Fever ----- Cholera -----

Pernicious Malarial Fever ----- Smallpox -----

Hemorrhagic Malarial Fever ----- Cerebro-spinal Meningitis -----

What have been the prevailing diseases in your practice?

Has any epidemic occurred among domestic animals? If so, what?

What is the sanitary condition of your section, public and private?

General Remarks: -----

----- M. D.

BULLETIN

OF THE

NORTH CAROLINA BOARD OF HEALTH

Published Monthly at the Office of the Secretary of the Board, Raleigh, N. C.

GEO. G. THOMAS, M. D., <i>Pres.</i> , Wilmington.	W. P. IVEY, M. D.-----Lenoir.
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RICHARD H. LEWIS, M. D., <i>Secretary and Treasurer</i> , Raleigh.	

VOL. XIX.

DECEMBER, 1904.

No. 9.

THE GERMS OF CONSUMPTION.

(From a Hand-book on the Prevention of Tuberculosis, published by
The Charity Organization Society of New York City).

What are the germs? Ever since 1882 the word "germ" used in this title has meant a very definite thing—a vegetable, not a bug or anything else belonging to the animal world, but a vegetable of low order, and so small that a single one can be seen only with a powerful microscope. The German physician, Dr. Robert Koch, discovered it and proved that it was the one essential cause of the disease, which in all its forms is known as tuberculosis, and which in some of its forms is popularly known as consumption.

The germ is shaped like a slender, straight or slightly curved rod, and is so short that it would take three thousand of them in line to equal one inch in length. It has other names; it is sometimes called a microbe, sometimes a bacterium, and again a bacillus. It is alive, that is, it grows and multiplies, but it cannot move itself. So light is it, however, that it may be carried in the saliva expelled in talking, or in the sputum raised in coughing, and when that saliva or sputum is dried to dust it may be blown about in the dust. It may live many months, especially in a dark, damp place, but it is usually killed by ordinary daylight within one week, and by direct sunlight it is killed within a few hours. Cold has no effect on it, but it is immediately killed by being boiled, and it is even destroyed by a temperature of 140° F. continued for fifteen

minutes. Many substances, too, known as disinfectants, kill these germs in a shorter or longer time—minutes or hours. Rarely, if ever, does the germ multiply outside of the body except under laboratory conditions, that is, when it is planted on a special soil, and cared for at a special temperature, as may be done in a laboratory.

Where are they found? They are found in every person or animal affected with tuberculosis, in the parts of the body so affected. Almost every tissue may be the seat of growth of this parasite, but most frequently by far the lungs are affected, though in children, what are called the lymph glands and the bones are especially attacked. Millions of germs may exist in a single organ. They are also found, and in this is the danger, wherever the sputum from a lung so diseased has fallen, or wherever that dried sputum has been blown. They are also often found in the milk from a diseased cow, or in the flesh from a diseased animal, in the laboratory or the special soil on which they are grown. In the laboratory so many may be grown together in a glass that they may be seen as a grayish-white mass.

What do they do? If some are floating in the air, as they are apt to do wherever dust in an infected place is stirred up, and one, two or more pass into the nose or mouth with the air breathed in, and if they obtain lodgment in some tissue, and finding the necessary food and temperature there, begin to grow just as a fungus does on another plant, what happens? In the first place, just as the dust getting into the eye irritates it and makes it water, that is, makes the eye react, so these germs irritate the tissues and set up a reaction there, and on the character of this reaction depends the fate of the person or animal so infected. In every case some of the cells of the body gather around the germs, and form a little mass or lump there, which is called a tubercle, and these tubercles vary in size from the minutest pin-point to the size of a marble, or larger, and if many fuse together they may attain almost any size capable of being contained in the organ. Now, around these tubercles there may take place a process ending in healing or one ending in destruction and death. Just as a wound heals with the formation of a dense, hard scar, so scar material may be formed around and through the tubercles, shutting them in, and this scar may even be turned into stone. When there is a firm enough scar formed the germs can do no injury, and the person is said to be cured. Again, the irritation may be so great that the tissues become inflamed for some distance around the germs; if, for example, the germs are in the lung, a part of the lung may become solid just as it does in pneumonia. While the germs are multiplying they form a poison which is itself an irritant, and which, being absorbed, causes the fever and certain other of the symptoms of tuberculosis. When these tubercular masses attain some size they usually die at their centres, and if there is an opportunity, as when there is an air-tube leading from them to the open air, this dead matter may be coughed up, forming part of the sputum of consumptives.

No dust causes consumption unless it contains this particular germ, but wherever a consumptive has not been careful of his sputum, and has allowed it to mingle with the dust, that dust has become infectious. There are many sorts of germs in all ordinary dust besides the germs of consumption, and some of these other germs, when breathed in, may grow in this same dead tubercular matter, making it break down faster, and help in blood-poisoning. It is therefore one of the benefits of the pure air that the person breathing it does not have to fight these other germs. When this dead matter is coughed out a hole is left behind, and the cavities of the lungs which many consumptives have are thus begun. This dead matter regularly contains the germs of consumption, sometimes in very large numbers. The actual number in a measured amount has been counted in some cases under a microscope, and by this count, with a knowledge of the amount of sputum the consumptive has raised, it has been proved that as many as four thousand million germs have been expectorated in twenty-four hours.

While the tubercles are increasing in size some of the germs may get into a blood-vessel, and be carried off with the blood and deposited in another organ. One or more organs at a distance may thus be infected, and if the number of germs so scattered is large there may be tubercles formed all over the body—a rapidly fatal condition.

How do they enter the body? It is possible for the germs of tuberculosis to get into the body in several distinct ways: First, they may be swallowed in food, as in tuberculous milk or meat or in the milk taken by an infant from an unclean nipple of a consumptive mother.

Unless the greatest cleanliness is habitual, the hands of a consumptive are often contaminated with saliva or sputum, and infect food, books, papers and other things. When these infected articles are handled by others, some of the germs on them may be carried to the mouth and swallowed. The moustache and beard of a consumptive can be kept clean of germs only by constant care, and if they are not clean they may infect napkins and handkerchiefs. Kissing a consumptive may also permit the germs to be transferred to another. When the germs are taken into the mouth they may be swallowed and pass through the entire digestive tract and be evacuated without doing harm, or, on the other hand, they may come to rest and cause infection at any point in the tract—though oftenest in the tonsils and in the intestines.

In the second place, and more rarely, germs enter through cuts in the skin when one is handling tuberculous material, like the handkerchief or sputum jar of a consumptive; and third, most rarely of all, they may be given to the unborn child by the mother.

Practically, however, these germs in the majority of cases enter, in the fourth way, as infected dust breathed in by the person. In this case they may infect first the larynx, or voice box, or the large or small air-tubes, or the lungs themselves. In every city, and New York is no exception, there is a large number of careless consumptives, who allow

their undisinfected sputum to mingle with the dust wherever they are. These people are dangerous; careful consumptives are not dangerous, but the careless ones infect their surroundings indoors, and on the streets.

What protects against inhaled dust? Inasmuch as Dr. Prudden has shown that a person living in New York City breathes into his lungs in the course of a minute a number of bacteria, varying from ten to four hundred, according to the place where he is, it is worth while to consider what protection he has against these. Some of them, it should be said, are harmless; others might cause disease, and in the number there may be some of the germs of consumption.

There are, roughly speaking, four lines of defense. In the first place, a great many bacteria are caught in the nose or throat by the mucus, and are blown out or spat out or swallowed. These, therefore, do not enter the lungs. In the next place, the material, which starts down into the lungs along the windpipe and smaller air-tubes, and comes to rest on the walls of the tubes, is swept out by the very minute projecting hairs called cilia, which line the walls, and constantly move in such a manner that whatever is on them is driven away from the lungs up to the outer air.

There is a third protection in the existence in the body of certain cells which travel about and gather up waste material and carry it off to deposit it in a safe place or to digest and destroy it. Some of the cells imprison the germs and carry them away in the same way. Finally, if some of the germs do get into the smallest air space of the lungs and pass through their walls, they are taken up by a nutritant fluid called the lymph, which circulates all through the body, and carried to the fourth defense—certain glands which are placed at the roots of the lungs as well as at other points in the body and which act as filters. By these the germs are caught out of the stream and prevented from going to the rest of the body.

REVIEW OF DISEASES FOR NOVEMBER, 1904.

EIGHTY-TWO COUNTIES REPORTING.

Ninety-five counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of November the following diseases have been reported from the counties named:

MEASLES.—Burke, a few cases; Chatham; Durham, many; Forsyth; Gates, 6; Hertford, several; Johnston, 1; New Hanover, 2; Onslow, 15; Pitt, 1; Robeson, 1; Wake, 28; Yadkin, several—13 counties.

WHOOPING-COUGH.—Brunswick, several; Burke, many; Caldwell, several; Cherokee, 20; Clay, several; Davie, a few; Durham; Forsyth; Franklin, 7; Gaston, many; Granville, 10; Greene, 2; Halifax, a few; Hertford; Madison, many; Moore; New Hanover, 2; Onslow, 5; Rockingham, a few; Rutherford, a few; Vance, many; Wake, 3—22 counties.

SCARLATINA.—Buncombe, 1; Chatham, a few; Cherokee, 2; Cleveland, a few; Cumberland, 4; Durham; Edgecombe, 1; Forsyth, 9; Gaston, 1; Graham, 3; Granville, 1; Henderson, 2; New Hanover, 1; Pasquotank; Rockingham, several; Rowan, 3; Stanly, 1—17 counties.

DIPHTHERIA.—Alamance, 3; Alexander; Alleghany, 6; Ashe, 8; Bladen, 1; Buncombe, 1; Cabarrus, 2; Caldwell, several; Chatham, many; Craven, 4; Cumberland, 2; Edgecombe, 5; Forsyth; Franklin, 1; Gaston, 8; Granville, 19; Guilford, 7; Iredell, 8; Johnston, 2; Jones, 1; Lenoir, 2; Nash, 1; New Hanover, 10; Northampton, 3; Pender, 2; Rowan, 2; Stanly, 3; Vance; Wake, 2; Warren, 1; Wayne, several; Wilkes, 2; Wilson, 15; Yancey—34 counties.

TYPHOID FEVER.—Alamance, 5; Ashe, 12; Beaufort, 3; Bladen, 1; Brunswick, 1; Burke, 4; Cabarrus, 2; Caldwell, several; Camden, 1; Catawba, 4; Chatham; Clay, 2; Cleveland, a few; Craven, 2; Cumberland, some in all parts; Davidson, many; Duplin, a few; Durham, a few; Edgecombe, a few; Forsyth; Graham, 1; Granville, 6; Greene, 2; Halifax, 1; Henderson, 4; Hertford, 8; Iredell, 2; Johnston, a few; Lincoln, 1; Madison, many; Mecklenburg; Mitchell, 2; Moore, a few; New Hanover, 6; Onslow, 5; Pasquotank; Pender, 1; Pitt, 1; Randolph, 8 or 10; Robeson, several; Rockingham, a few; Rowan, 4; Rutherford, 6; Sampson, a few; Scotland, a few; Stanly, 2; Union, 10; Vance, many; Wake, 7; Warren, 3; Wayne, 2; Yadkin; Yancey, a few—53 counties.

MALARIAL FEVER.—Brunswick; Craven; Cumberland, a few; Duplin; Franklin; Gates, 3; Hyde, in all parts; Johnston, in all parts; Jones; New Hanover; Northampton; Onslow, in all parts; Pasquotank; Robeson; Sampson; Wake; Washington—17 counties.

MALARIAL FEVER, PERNICIOUS.—Brunswick; Craven; Cumberland, a few; Duplin; Wake, 1.

MALARIAL FEVER, HEMORRHAGIC.—Craven, 1; Jones, 1; New Hanover, 1; Northampton, 4; Onslow, 10; Washington, 1—6 counties.

INFLUENZA.—Randolph; Transylvania.

PNEUMONIA.—Alamance, in all parts; Ashe; Bladen, 1; Burke, a few; Chowan, 1; Currituck, 1; Graham, 3; Mecklenburg; Mitchell; Nash, 3; Person; Randolph, Transylvania, several; Wake, 1—14 counties.

MUMPS.—Clay, in all parts; Hertford, in all parts.

VARICELLA.—Person; Sampson.

SMALL-POX.—Anson, 2; Ashe, 2; Beaufort, 17; Bladen, 14; Cabarrus, 2; Camden, 59; Cherokee, 25; Clay, 5; Craven, 12; Durham, 6; Gaston; Greene, 75; Henderson, 7; Lenoir, 26; Mecklenburg, 8; New Hanover, 5; Onslow, 80; Pender, 1; Person, 3; Pitt, 38; Richmond, 4; Robeson, 1; Rockingham, 1; Rowan, 1; Rutherford, 5; Sampson, 1; Scotland, several; Union, 24; Wake, 45, in southern part; Warren, 3; Wayne, 2; Wilkes, 7—32 counties.

CHOLERA, IN HOGS.—Brunswick; Jones; Onslow; Sampson; Washington.

HYDROPHOBIA, IN DOGS.—Henderson, 1.

No diseases reported from Bertie, McDowell and Polk.

No reports received from Carteret, Caswell, Columbus, Harnett, Haywood, Macon, Montgomery, Orange, Pamlico, Perquimans, Surry, Swain and Watauga.

SUMMARY OF MORTUARY REPORTS FOR NOVEMBER, 1904.

TWENTY-SEVEN TOWNS.

	White.	Colored.	Total.
Aggregate population	93,700	66,600	160,300
Aggregate deaths	126	153	279
Representing temporary annual death rate per 1,000	16.1	27.6	20.9
<i>Causes of Death.</i>			
Typhoid fever	11	6	17
Scarlet fever	1	0	1
Malarial fever	0	6	6
Diphtheria	2	0	2
Pneumonia	10	16	26
Consumption	11	23	34
Brain diseases	6	8	14
Heart diseases	9	6	15
Neurotic diseases	5	5	10
Diarrhœal diseases	8	8	16
All other diseases.....	53	61	114
Accident	9	13	22
Violence	1	1	2
	<hr/> 126	<hr/> 153	<hr/> 279
Deaths under five years.....	26	49	75
Still-born	8	13	21

Mortuary Report for November, 1904.

TOWNS AND REPORTERS.	RACES.	POPULATION.		TEMPORARY ANNUAL DEATH-RATE PER 1,000.																			TOTAL DEATHS.		Deaths under five years.
		By Races.	Total.	By Races.	Total.	Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrheal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	By Races.	By Towns.		
Charlotte	W.	11,000		10.9		1						1	1					7			10	21	3	3	
Dr. F. O. Hawley.	C.	7,200	18,200	16.9	13.8							5						4			11		6	2	
Durham	W.	8,000		28.5		2	1					2	2		4			7	1		19	40	3	1	
Dr. N. M. Johnson.	C.	5,000	13,000	52.4	36.9												2	2				21	13		
Edenton	W.	1,200		0.0																	0				
Dr. T. J. Hoskins.	C.	1,800	3,000	13.3	8.0																				
Elizabeth City	W.	5,000		9.6				1							1			2				4	12	2	
Dr. I. Fearing.	C.	3,000	8,000	32.0	18.0								2	1				5				8	3		
Fayetteville	W.	2,500		19.2		1								1				2				4	8	2	
Dr. A. S. Rose.	C.	2,300	4,800	20.9	20.0		2											1	1			4			
Goldsboro	W.	3,500		17.1		1							1					4				5	3		
Robt. A. Creech, H. O.	C.	2,600	6,100	18.5	17.7								1					2				4	9	1	
Greensboro	W.	6,100		21.6		1						1	1		2			5	1			11	28	1	
Jno. S. Michaux, C. C.	C.	4,000	10,100	51.0	33.3	1	1					1	3	1	3			5	2			17	3	4	
Henderson	W.	2,100		22.8		1						1										4	6		
Dr. John H. Tucker.	C.	1,700	3,800	14.1	18.9													2				2			
Laurelburg	W.	900		13.3								1										1	2		
Dr. G. D. Everington.	C.	600	1,500	20.0	16.0													1				1			
Lexington	W.	800		0.0																		0	0		
J. H. Moyer, Mayor.	C.	500	1,300	0.0	0.0																	0			
Marion	W.	800		0.0																		0	0		
Dr. B. L. Ashworth.	C.	400	1,200	0.0	0.0																	0			
Monroe	W.	1,850		6.5														1				1	2		
Dr. Jno. M. Blair.	C.	600	2,450	20.0	9.8								1									1			
Oxford	W.	1,250		19.2											1	1						2	3	1	
Dr. S. D. Booth.	C.	1,200	2,450	10.0	14.7													1				1	1		
Raleigh	W.	8,000		22.5		1							1	2	1	3	7					15	26	4	
T. P. Sale, Clerk B. H.	C.	5,800	13,800	22.8	22.6								2		1		1	6	1			11			
Reidsville	W.	2,900		12.4									1	1		1						3	6	1	
R. S. Montgomery, C. B.	C.	1,300	4,200	27.7	17.1											1			2			3			
Rocky Mount	W.	1,600		15.0									1						1			2	3		
Dr. J. T. Shubrick.	C.	1,500	3,100	8.0	11.6								1									1			
Salen	W.	3,300		14.5				1										1	2			4	4	1	
S. E. Butner, Supt. H.	C.	350	3,650	0.0	13.1																	0			
Salisbury	W.	3,900		15.4		3						1			1							5	9		
Dr. H. T. Trantham.	C.	2,500	6,400	19.2	16.9								1	2					1			4			
Southport	W.	900		0.0																		0	0		
Dr. D. I. Watson.	C.	500	1,400	0.0	0.0																	0			
Tarboro	W.	2,000		0.0																		0	1		
Dr. Wm. J. Thigpen.	C.	500	2,500	24.0	4.8														1						
Wadesboro	W.	1,000		12.0															1			1	2		
Dr. J. H. Bennett.	C.	700	1,700	17.1	14.1											1						1		1	
Washington	W.	3,000		0.0									2		1							0	3		
Dr. D. T. Tayloe.	C.	2,900	5,900	12.4	6.1								2		1							3			
Waynesville	W.	1,600		15.0									1	1								2	2	1	
Dr. Thos. Stringfield.	C.	400	2,000	0.0	12.0																	0			
Weldon	W.	700		17.1															1			1	1		
J. T. Gooch, Mayor.	C.	750	1,450	0.0	8.2																	0			
Wilmington	W.	10,000		18.0		1						1	1	1	1	3	7					15	49	3	
Dr. Chas. T. Harper.	C.	11,000	21,000	37.1	28.0		3					1	5	3	4	4	16	1				31	11		
Wilson	W.	3,800		9.5											2	1						3	6	1	
Dr. W. S. Anderson.	C.	3,000	6,800	12.0	10.7														2			1	3		
Winston	W.	6,000		28.0								2	1	1				3	7			11	34	2	
Dr. J. L. Hanes.	C.	4,500	10,500	53.3	38.8	1						4	4	2				2	5	2		20	5	4	

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

County Superintendents of Health.

Alamance	Dr. H. R. Moore.	Jones.....	Dr. N. G. Shaw.
Alexander	Dr. C. J. Carson.	Lenoir	Dr. C. L. Pridgen.
Alleghany	Dr. Robt. Thompson.	Lincoln	Dr. John W. Saine.
Anson	Dr. J. H. Bennett.	McDowell	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon	Dr. W. A. Rogers.
Beaufort	Dr. D. T. Tayloe.	Madison	Dr. W. J. Weaver.
Bertie	Dr. H. V. Dunstan.	Martin	Dr. W. H. Harrell.
Bladen	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin.
Brunswick	Dr. J. Arthur Doshier.	Mitchell.....	Dr. Virgil R. Butt.
Buncombe	Dr. D. E. Sevier.	Montgomery	Dr. M. P. Blair.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod.
Cabarrus.....	Dr. R. S. Young.	Nash	Dr. J. P. Battle.
Caldwell	Dr. W. P. Ivey.	New Hanover	Dr. W. D. McMillan.
Camden.....	Dr. C. G. Ferebee.	Northampton.....	Dr. H. W. Lewis.
Carteret	Dr. F. M. Clarke.	Onslow.....	Dr. E. L. Cox.
Caswell	Dr. S. A. Malloy.	Orange.....	Dr. C. D. Jones.
Catawba	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. T. A. Kirkman.	Pasquotank	Dr. J. B. Griggs.
Cherokee.....	Dr. B. B. Meroney.	Pender.....	Dr. R. J. Williams.
Chowan.....	Dr. T. J. Hoskins.	Perquimans	Dr. C. C. Winslow.
Clay	Dr. P. B. Killian.	Person	Dr. J. A. Wise.
Cleveland	Dr. B. H. Palmer.	Pitt.....	Dr. Zeno Brown.
Columbus.....	Dr. N. A. Thompson.	Polk	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph	Dr. W. J. Moore.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. F. J. Garrett.
Currituck	Dr. H. M. Shaw.	Robeson	Dr. H. T. Pope.
Dare	Dr. W. B. Fearing.	Rockingham	Dr. Sam Ellington.
Davidson	Dr. Joel Hill.	Rowan	Dr. W. L. Crump.
Davie	Dr. M. D. Kimbrough.	Rutherford.....	Dr. T. B. Twitty.
Duplin	Dr. A. J. Jones.	Sampson	Dr. John A. Stevens.
Durham	Dr. N. M. Johnson.	Scotland	Dr. A. W. Hamer.
Edgecombe	Dr. W. J. Thigpen.	Stanly.....	Dr. V. A. Whitley.
Forsyth.....	Dr. W. O. Spencer.	Stokes	
Franklin	Dr. R. F. Yarborough.	Surry	Dr. John R. Woltz.
Gaston.....	Dr. H. F. Glenn.	Swain.....	Dr. A. M. Bennet.
Gates.....	Dr. W. O. P. Lee.	Transylvania	Dr. C. W. Hunt.
Graham	Dr. V. J. Brown.	Tyrrell.....	
Granville	Dr. S. D. Booth.	Union	Dr. John M. Blair.
Greene.....	Dr. W. B. Murphy, Jr.	Vance.....	Dr. H. H. Bass.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. J. L. McCullers.
Halifax	Dr. I. E. Green.	Warren.....	Dr. M. P. Perry.
Harnett.....	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. F. Abel.	Watanga.....	Dr. C. W. Phipps.
Henderson	Dr. J. G. Waldrop.	Wayne.....	Dr. Williams Spicer.
Hertford	Dr. C. F. Griffin.	Wilkes.....	Dr. W. P. Horton.
Hyde	Dr. E. H. Jones.	Wilson	Dr. W. S. Anderson.
Iredell	Dr. M. R. Adams.	Yadkin	Dr. T. R. Harding.
Jackson.....	Dr. R. L. Davis.	Yancey	Dr. J. L. Ray.
Johnston	Dr. Thel Hooks.		

BULLETIN

OF THE

NORTH CAROLINA BOARD OF HEALTH

Published Monthly at the Office of the Secretary of the Board, Raleigh, N. C.

GEO. G. THOMAS, M. D., <i>Pres.</i> , Wilmington.	W. P. IVEY, M. D.,-----Lenoir.
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VOL. XIX.

JANUARY, 1905.

No. 10.

DISINFECTION AND DISINFECTANTS.

While attending the annual meeting of the American Public Health Association at Havana, January 9-13, we obtained a copy of the report of the Standing Committee on Disinfection and Disinfectants, by Prof. F. C. Robinson, Chairman, Brunswick, Me., one of the highest authorities on the subject in the country, and we avail ourself of the opportunity to give our readers some extracts therefrom of interest and value. We would especially commend to our medical readers and to health officers particularly the abstract of "Experiments in formaldehyde disinfection" from the Report of the State Board of Health of Maine for 1904. The method detailed is so simple, so easy of application and so effective that we cordially commend it to their careful consideration. We beg to call attention to what is said in regard to washing floors, especially of school-houses and public buildings, with solutions of formaldehyde so weak as to cause no disagreeable odor.

The recent experiments of Moore and Kellerman of the Bureau of Plant Industry, U. S. Department of Agriculture, on the purification of public water supplies by copper sulphate in such small amount as not to impair its quality for drinking purposes, have excited widespread interest. This method seems to be quite effective in ridding reservoirs of troublesome algae imparting a bad odor to the water, but its effect upon the vital impurity, pathogenic organisms, is by no means so certain. In fact, in a paper by Mr. F. S. Hollis of New Haven, entitled "A Practical Test of the Copper Sulphate Method for the Removal of Micro-organisms

from Water Supplies," read at the meeting, the statement was made that while the bacteria were reduced in the first 24 hours after the application of the copper 60 per cent (if we remember rightly) tests made after a few days showed them to be three or four times as numerous as they were before its use. The probable explanation of this discouraging fact was that the destruction of the algæ and other low orders of plants living on the same food as the bacteria left for the latter a more abundant food supply of which they promptly availed themselves. The attitude of the Association towards this method was a conservative one.

The following are the extracts selected:

The Committee, in accordance with its custom for several years, constructs its report as a review of the more important literature on the subject during the past year, especially in the foreign journals. We think that thus a bibliography is gradually made which will be of permanent value. No attempt is made to abstract fully the articles, but to call attention to their contents simply, note salient features, and comment very briefly upon them. We think it will be easy in all cases to distinguish our comments from the subject-matter of the articles. The matter is treated in chronological order very nearly, beginning with a few articles overlooked last year.

Revue d'Hygiène, Vol. 25, No. 5, May 20, 1903. "The value of sulfurous acid as a disinfectant," Calmette and Rolants. They show again what has been proved so many times before that sulfurous acid made by burning sulfur, when present in a room in not less than 8 parts per 100, will destroy the more easily killed bacteria, including streptococci and typhoid, but is not certain to kill diphtheria, tubercle, or spores of anthrax.

Zeitschrift für Schulgesundheitspflege, Nos. 2 and 3, 1904. "The disinfection of books," Benda-Berlin. Calls attention to the danger of the spread of infectious disease through library and school books. Cites among other proofs of this the recent report of Dr. Mitulescu to the Royal Institute of Infectious Diseases in which he speaks of finding tubercle bacilli in many books which had been in long use in a public library. He recommends that the danger should be met as far as possible by notices in libraries calling attention to the advisability of handling books with clean hands, of not touching the hands to the mouth after handling books until the hands are washed, and in addition submitting books much used to the action of formaldehyde vapor once in a while.

It is probable that the inside of books is a most suitable place for bacteria to keep their vitality because when the book is closed they are protected from action of light and circulating air. The best practical way to disinfect books is to arrange them so the leaves separate and submit them to formaldehyde fumes in as small a space as possible. From a public health standpoint water-proof paper and ink to use in making school books are very desirable.

Hygienische Rundschau, Vol. 14. No. 9. May 1, 1904. "Soaps as disinfectants." Konardi. Confirms previous experiments by others that pure soap has little bactericidal power, but shows also that most toilet soaps have a strong action to destroy bacteria due entirely to the flavoring materials present, such as turpentine, vanilin, cumarin, heliotropin. Such soaps when dissolved in water 1-1000 killed anthrax spores in 12 hours.

In the same journal in a notice of the work of Heller which seems to prove that although pure soap has only little action as a bactericide, yet its addition to other disinfectants frequently causes a marked increase in disinfecting power. He thinks this may be due to the formation of a more disinfecting compound, or perhaps to increase of ionization. Konardi's results given above may also have a bearing on the matter.

Bulletin No. 64, Bureau of Plant Industry, U. S. Department of Agriculture. Moore and Kellerman have made a study of the literature relating to the action of copper sulfate upon bacteria and algæ, and have done some experimental work of their own to further elucidate the question. Their method has successfully been used for ridding the reservoirs of public water supplies of troublesome algæ, and they deem it probable that the same method can be used for the purpose of sterilizing water supplies infected with pathogenic organisms. Their work has opened a wide field for further work to determine the value and the limitations of this process.

Report State Board of Health. Maine. 1904. "Experiments in formaldehyde disinfection." Evans and Russell. This is a report of work done in the Laboratory of Hygiene by direction of the State Board of Health. Actual tenement house rooms were used, and the formaldehyde liberated from formalin by action of potassium permanganate. The crystals of permanganate were put in the bottom of a common earthen jar or better in a dish made for the purpose of common tinware, about 10 inches in diameter and 17 inches high, the upper 9 inches flaring out at an angle of about 50 degrees. This was placed in the room and the formalin poured upon it. Heat is generated and within 5 minutes 80 per cent. of the formaldehyde is driven into the room. They used at rate of 1 quart formalin to 1,000 cu. ft. They made 279 trials exposing 1,529 cultures of diphtheria, anthrax, subtilis, pyogenes albus and aureus, pyocyaneus, tetragenus, streptococci and mixed cultures from throat swabs. They got only 27 growths. They found 3 hours exposure as effective as a longer time. They got also more penetration than is usual with other methods. No extra water was used, but the atmosphere was quite humid. 21 of the 27 growths were of subtilis. The method is simple and not dangerous, and not so expensive as to be prohibitive.

Room disinfection in Germany. In closing this report we will give a brief account of the methods used in Germany to disinfect rooms. It is taken chiefly from a report of a special visit to various cities made by

Petruschky for the purpose of finding out the facts. He visited Halle, Berlin, Dresden, Munich, Breslau, and Posen.

In all cities except Berlin, the general method used was that recommended a few years ago by Flugge of Breslau. It consists of formaldehyde fumigation combined with steam disinfection of beds at disinfecting stations. In case of much filth solutions of formaldehyde are poured upon it.

The formaldehyde is evaporated into the room from a very dilute solution of formalin to prevent polymerization. For 100 cubic meters of space about $1\frac{1}{2}$ liters of 8 per cent. formaldehyde solution are evaporated.

The room is first closed and cracks and openings sealed with wadding paper and putty. Everything in the room is arranged so that the gas can get at all surfaces. The room is kept closed for $3\frac{1}{2}$ -7 hours and then ammonia sent in to neutralize the formaldehyde. The bed and bedding are then removed to the station and disinfected with steam.

In Berlin formaldehyde disinfection on the same ground plan is used to a certain extent chiefly in the better houses. But in general all articles which will stand it are wiped over with 3 per cent. carbolic acid solution, and all beds, bedding, carpets, rugs, curtains, etc., are removed to the station and disinfected by steam. Formaldehyde fumigation may or may not be used also according to circumstances. No sulphur fumigation is used in any of the cities.

Probably the above plan, especially Flugge's, is essentially followed in most American cities, large and small. Certainly it is the plan that this Committee recommends as on the whole the safest and best in accordance with present knowledge on the subject.

There is one important point in room disinfection which is not generally considered even by those with knowledge, and that is that fumigation with a gas like formaldehyde does not cease its good work when the room is again occupied. It is absorbed to a certain extent by most surfaces, especially clothing and paper and varnishes, and so continues to act upon germs already there and such as may come later for some time. It is well established that a weak disinfectant acting for a long time is frequently as effective as a strong one acting a short time. The presence of formaldehyde has been found on the surface of walls for weeks after they have been exposed to it. Hence the failure of substances to be sterilized at once is no proof of lack of action of a disinfectant in a room. In the same line the writer has seen most remarkable results follow the occasional use of weak solutions of formaldehyde on the floors of school-houses—solutions so weak that they gave no disagreeable odor. Infectious colds and other dust borne diseases were much lessened among the scholars. We believe that the occasional use of such solutions on floors and surfaces in dwelling-houses as well as public buildings would do a great deal towards improving public health.

REVIEW OF DISEASES FOR DECEMBER, 1904.

EIGHTY-NINE COUNTIES REPORTING.

Ninety-five counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases the Superintendent, has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of December the following diseases have been reported from the counties named:

MEASLES.—Beaufort, 10 cases; Camden; Cleveland, several; Durham, many; Gates, 7; Granville, 12; Hertford, several; Mecklenburg; Person; Rowan, 10; Rutherford, 5; Surry, a few; Wake, 45; Washington, 1—13 counties.

WHOOPING-COUGH.—Burke, a few; Caldwell; Caswell; Chatham; Cherokee, 30; Clay, 10; Durham; Franklin; Gaston, many; Gates, 3; Graham, several; Granville, 8; Hertford, many; Lincoln, epidemic; Macon, in all parts; Madison, in all parts; Mecklenburg; Onslow, 4; Orange, a few; Randolph, a few; Rowan, 12; Rutherford, a few; Transylvania, a few; Wake, 14; Watauga, in several parts—25 counties.

SCARLATINA.—Cumberland, 2; Durham, 2; Forsyth, 5; Gaston, 1; Granville, 1; Guilford, 4; Henderson, 3; Macon, 3; Mecklenburg; New Hanover, 3; Onslow, 3; Pasquotank; Randolph, a few; Rockingham, several; Rowan, 1; Wake, 5; Wilkes—17 counties.

DIPHTHERIA.—Alamance, 2; Caldwell, several; Carteret, 3; Caswell; Chatham, a few; Craven, 1; Cumberland, 2 or 3; Davidson, 1; Edgecombe, 2; Forsyth, 3; Gaston, 1; Graham, 1; Granville, 9; Guilford, 8; Henderson, 2; Jackson, 3; Johnston, 2; Jones, 2; Lenoir, 2; Mecklenburg; New Hanover, 14; Pamlico; Pender, 3; Pitt, 1; Rockingham; Sampson, 1; Stanly; Union, 3; Wake, 8—29 counties.

TYPHOID FEVER.—Ashe, 3; Cabarrus, 2; Caldwell, several; Catawba, 4; Chatham, a few; Clay, 1; Cleveland, a few; Craven, 1; Durham, 1; Graham, 1; Granville, 5; Halifax, 1; Harnett, a few; Hertford, 2; Jackson, 2; Johnston, several; Jones, 2; Lenoir, several; Madison, in all parts; Mecklenburg; Nash, 2; New Hanover, 4; Onslow, 2; Pamlico, 1; Pasquotank; Pitt, 1; Randolph, 3; Richmond, 1; Robeson, a few; Rockingham, a few; Scotland, a few; Stanly; Wake, 9; Wayne, 2; Wilkes 1—36 counties.

MALARIAL FEVER.—Gates, 2; Jones, in all parts; Onslow; Pamlico; Robeson, a few—5 counties.

MALARIAL FEVER, PERNICIOUS.—Jones, 1.

MALARIAL FEVER, HEMORRHAGIC.—Onslow, 2; Pamlico, 1.

INFLUENZA.—Brunswick; Burke, a few; Clay; Davie, in all parts; Lincoln, in all parts; Macon, in all parts; Onslow, in all parts; Randolph; Richmond, Transylvania, in all parts—10 counties.

PNEUMONIA.—Ashe; Bladen, 5; Cabarrus, 7; Camden; Caswell; Clay; Greene, 4; Halifax, 2; Jones, 1; Mecklenburg; Onslow, in all parts; Pender, 1; Perquimans, 3; Person; Pitt, 2; Transylvania, a few; Wake, 2; Warren, 2; Watauga, several; Wilson; Yadkin, a few; Yancey—22 counties.

HYDROPHOBIA.—Guilford, 1.

CEREBRO-SPINAL MENINGITIS.—Mecklenburg; Bladen.

MUMPS.—Caswell; Sampson, a few.

TONSILLITIS.—Currituck; Duplin; Rockingham.

TETANUS.—Guilford, 1.

VARICELLA.—Randolph.

SMALLPOX.—Anson, several; Ashe, 6; Beaufort, 20; Bladen, 14; Brunswick, 2; Camden, epidemic; Chatham, 1; Cherokee, 25; Clay, 6; Cleveland, 1; Craven, 17; Cumberland, 1; Granville, 1; Greene, 35; Harnett, 5; Henderson, 11; Hertford, 45; Hyde; Lenoir, 40; Mecklenburg, 4; New Hanover, 23; Northampton, 4; Onslow, many; Person, 3; Pitt, 1; Richmond, 20; Sampson, 15; Scotland, many; Union, 21; Wake, 46; Wayne, several; Wilkes, 15—31 counties.

BLACKLEG, IN CATTLE.—Alleghany.

CHOLERA, IN HOGS.—Brunswick, Clay, Onslow, Sampson.

DISTEMPER, IN HORSES.—Ashe.

No diseases reported from Alexander, Alleghany, Bertie, Buncombe, Chowan, Iredell, McDowell and Polk.

No reports received from Columbus, Martin, Mitchell, Montgomery, Moore and Swain.

SUMMARY OF MORTUARY REPORTS FOR DECEMBER, 1904.

TWENTY-FIVE TOWNS.

	<i>White.</i>	<i>Colored.</i>	<i>Total.</i>
Aggregate population	94,600	69,350	163,950
Aggregate deaths	104	113	217
Representing temporary annual death-rate per 1,000	13.2	19.6	15.9
<i>Causes of Death.</i>			
Typhoid fever	1	4	5
Diphtheria	2	0	2
Measles	0	1	1
Pneumonia	11	13	24
Consumption	14	16	30
Brain diseases	10	11	21
Heart diseases	11	8	19
Neurotic diseases	2	3	5
Diarrhoeal diseases	7	3	10
All other diseases	37	50	87
Accident	6	4	10
Suicide	2	0	2
Violence	1	0	1
	<hr/>	<hr/>	<hr/>
	104	113	217
Deaths under five years	26	44	70
Still-born	9	17	26

Mortuary Report for December, 1904.

TOWNS AND REPORTERS.	RACES.	POPULATION.		TEMPORARY ANNUAL DEATH-RATE PER 1,000.																TOTAL DEATHS.					
		By Races.	Total.	By Races.	Total.	Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrheal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	By Races.	By Towns.	Deaths under five years.	Still-born.
Asheville	W.	8,000		10.5																		7	10	1	...
Dr. C. V. Reynolds.	C.	5,000	13,000	7.2	9.2																	3		1	...
Charlotte	W.	11,000		10.9								1		3	1							10	15	4	...
Dr. F. O. Hawley.	C.	7,200	18,200	8.3	9.3								1	1								5	6	3	...
Durham	W.	8,000		12.0		1						2	2									8	16	2	...
Dr. N. M. Johnson.	C.	5,000	13,000	19.2	14.8						1	1	2									8	4	2	...
Edenton	W.	1,200		0.0																		0	0		...
Dr. T. J. Hoskins.	C.	1,800	3,000	0.0	0.0																	0			...
Elizabeth City	W.	5,000		16.8								1		1								7	11	1	...
Dr. I. Fearing.	C.	3,000	8,000	16.0	16.5							1	1	1								4		2	...
Fayetteville	W.	2,500		14.4										1	1							3	8		...
Dr. A. S. Rose.	C.	2,300	4,800	26.1	20.0	1						1	1									5	3		...
Goldsboro	W.	3,500		10.3									2									3	10	1	...
Robt. A. Creech, H. O.	C.	2,600	6,100	32.3	19.7	1							1	1								7	4		...
Greensboro	W.	6,100		19.7								1	2	4								10	22	3	...
Jno. S. Michaux, C. C.	C.	4,000	10,100	36.0	26.1							3	2									12	5	2	...
Henderson	W.	2,100		17.1								1										1	3		...
Dr. John H. Tucker.	C.	1,700	3,800	7.1	12.6							1										3	4		...
Lexington	W.	800		45.0									1									3	3		...
J. H. Moyer, Mayor.	C.	500	1,300	0.0	27.7																	0			...
Marion	W.	800		30.0																		2	2		...
Dr. B. L. Ashworth.	C.	400	1,200	0.0	20.0																	0			...
Monroe	W.	1,850		13.0								1										2	2		...
Dr. Jno. M. Blair.	C.	600	2,450	0.0	9.8																	0			...
Oxford	W.	1,250		38.4				1						1								4	8	3	...
Dr. S. D. Booth.	C.	1,200	2,450	40.0	39.2									1	1	1						4			...
Raleigh	W.	8,000		6.0									2	1								3	15		...
T. P. Sale, Clerk B. H.	C.	5,800	13,800	22.8	13.0							1	2	1								11	6		...
Rocky Mount	W.	1,600		7.8											1							1	2	1	...
Dr. J. T. Shubrick.	C.	1,500	3,100	8.0	7.7																	1			...
Salisbury	W.	3,900		9.2								1			2							3	8		...
Dr. H. T. Trantham.	C.	2,500	6,400	24.0	15.0									1	1							5			...
Southport	W.	900		0.0																		0	1		...
Dr. D. I. Watson.	C.	500	1,400	24.0	8.6	1																1		1	...
Tarboro	W.	2,000		24.0											2							4	5	1	...
Dr. Wm. J. Thigpen.	C.	500	2,500	24.0	24.0																	1			...
Wadesboro	W.	1,000		36.0								1										3	3		...
Dr. J. H. Bennett.	C.	700	1,700	0.0	21.2																	0			...
Washington	W.	3,000		4.0									1									1	6	1	...
Dr. D. T. Tayloe.	C.	2,900	5,900	20.7	12.2																	5			...
Waynesville	W.	1,600		7.5										1								1	2		...
Dr. Thos. Stringfield.	C.	400	2,000	30.0	12.0									1								0			...
Weldon	W.	700		0.0																		0	0	1	...
J. T. Gooch, Mayor.	C.	750	1,450	0.0	0.0																	0			...
Wilmington	W.	10,000		18.0				1				2	3	2	2	2	1	4				15	38	3	...
Dr. Chas. T. Harper.	C.	11,000	21,000	25.1	21.7	1						1	3	2	4	3	2	7				23	7	7	...
Wilson	W.	3,800		15.8																		5	12	2	...
Dr. W. S. Anderson.	C.	3,000	6,800	28.0	21.2							2	1	1								7			...
Winston	W.	6,000		10.0																		5	14	2	...
Dr. J. L. Hanes.	C.	4,500	10,500	24.0	16.0							2	1	2								9			...

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

County Superintendents of Health.

Alamance	Dr. H. R. Moore.	Jones.....	Dr. N. G. Shaw.
Alexander	Dr. C. J. Carson.	Lenoir	Dr. C. L. Pridgen.
Alleghany	Dr. Robt. Thompson.	Lincoln	Dr. John W. Saine.
Anson	Dr. J. H. Bennett.	McDowell	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon	Dr. W. A. Rogers.
Beaufort	Dr. D. T. Tayloe.	Madison	Dr. W. J. Weaver.
Bertie	Dr. H. V. Dunstan.	Martin.....	Dr. W. H. Harrell.
Bladen.....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin.
Brunswick	Dr. J. Arthur Doshier.	Mitchell.....	Dr. Virgil R. Butt.
Buncombe	Dr. D. E. Sevier.	Montgomery	Dr. M. P. Blair.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod.
Cabarrus.....	Dr. R. S. Young.	Nash	Dr. J. P. Battle.
Caldwell	Dr. W. P. Ivey.	New Hanover	Dr. W. D. McMillan.
Camden.....	Dr. C. G. Ferebee.	Northampton.....	Dr. H. W. Lewis.
Carteret	Dr. F. M. Clarke.	Onslow.....	Dr. E. L. Cox.
Caswell	Dr. S. A. Malloy.	Orange.....	Dr. C. D. Jones.
Catawba	Dr. Geo. H. West.	Familico.....	Dr. H. P. Underhill.
Chatham.....	Dr. T. A. Kirkman.	Pasquotank	Dr. J. B. Griggs.
Cherokee.....	Dr. B. B. Meroney.	Pender.....	Dr. R. J. Williams.
Chowan.....	Dr. T. J. Hoskins.	Perquimans.....	Dr. C. C. Winslow.
Clay.....	Dr. P. B. Killian.	Person.....	Dr. J. A. Wise.
Cleveland	Dr. B. H. Palmer.	Pitt.....	Dr. Zeno Brown.
Columbus.....	Dr. N. A. Thompson.	Polk.....	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph	Dr. W. J. Moore.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. F. J. Garrett.
Currituck	Dr. H. M. Shaw.	Robeson.....	Dr. H. T. Pope.
Dare	Dr. W. B. Fearing.	Rockingham	Dr. Sam Ellington.
Davidson.....	Dr. Joel Hill.	Rowan.....	Dr. W. L. Crump.
Davie.....	Dr. M. D. Kimbrough.	Rutherford.....	Dr. T. B. Twitty.
Duplin	Dr. A. J. Jones.	Sampson	Dr. John A. Stevens.
Durham.....	Dr. N. M. Johnson.	Scotland	Dr. A. W. Hamer.
Edgecombe	Dr. W. J. Thigpen.	Stanly.....	Dr. V. A. Whitley.
Forsyth.....	Dr. W. O. Spencer.	Stokes	
Franklin	Dr. R. F. Yarborough.	Surry	Dr. John R. Woltz.
Gaston.....	Dr. H. F. Glenn.	Swain.....	Dr. A. M. Bennet.
Gates.....	Dr. W. O. P. Lee.	Transylvania	Dr. C. W. Hunt.
Graham.....	Dr. V. J. Brown.	Tyrrell.....	
Granville	Dr. S. D. Booth.	Union	Dr. John M. Blair.
Greene.....	Dr. W. B. Murphy, Jr.	Vance.....	Dr. H. H. Bass.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. J. L. McCollers.
Halifax.....	Dr. I. E. Green.	Warren.....	Dr. M. P. Perry.
Harnett.....	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. F. Abel.	Watauga.....	Dr. H. McD. Little.
Henderson	Dr. J. G. Waldrop.	Wayne.....	Dr. Williams Spicer.
Hertford	Dr. C. F. Griffin.	Wilkes.....	Dr. W. P. Horton.
Hyde.....	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson.
Iredell	Dr. M. R. Adams.	Yadkin	Dr. T. R. Harding.
Jackson.....	Dr. R. L. Davis.	Yancey	Dr. J. L. Ray.
Johnston	Dr. Thiel Hooks.		

[You are asked to fill out and mail one of these forms to the Superintendent of Health of your county on or before the third of each month, that he may use it in making his report to the Secretary of the State Board.]

Have any of the following diseases occurred in your practice during the month just closed. If so, state number of cases.

Whooping-cough ----- Typhoid Fever -----

Measles ----- Typhus Fever -----

Diphtheria ----- Yellow Fever -----

Scarlet Fever ----- Cholera -----

Pernicious Malarial Fever ----- Smallpox -----

Hemorrhagic Malarial Fever ----- Cerebro-spinal Meningitis -----

What have been the prevailing diseases in your practice?

Has any epidemic occurred among domestic animals? If so, what?

What is the sanitary condition of your section, public and private?

General Remarks: -----

----- M. D.

BULLETIN

OF THE

NORTH CAROLINA BOARD OF HEALTH

Published Monthly at the Office of the Secretary of the Board, Raleigh, N. C.

GEO. G. THOMAS, M. D., <i>Pres.</i> , Wilmington.	W. P. IVEY, M. D.,-----Lenoir.
S. WESTRY BATTLE, M. D.,---Asheville.	FRANCIS DUFFY, M. D.,-----New Bern.
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RICHARD H. LEWIS, M. D., <i>Secretary and Treasurer</i> , Raleigh.	

VOL. XIX.

FEBRUARY, 1905.

No. 11.

REPORT OF EIGHTY CASES OF TYPHOID FEVER AT THOMASVILLE BAPTIST ORPHANAGE.*

BY C. A. JULIAN, B. S., M. D., VICE-PRESIDENT NORTH CAROLINA MEDICAL SOCIETY, PRESIDENT DAVIDSON COUNTY MEDICAL SOCIETY, ETC.

GENTLEMEN:—I want first to express to you my appreciation for your kind invitation to address you on this occasion, and assure you that it is not my object to advance any peculiar ideas, but simply to give facts that can be believed, and garner together fresh information and so weave it not alone to please and furnish it as a new, sparkling novelty, but start afresh in our minds a longing for deeper investigation and a desire to banish from our land this dreadful disease. And still there is something more than a laudable desire to investigate this epidemic. There is a sympathetic, a pathetic side; no words can express it, no pen can describe it. I wish I could picture to you the eighty little feverish, fatherless and motherless fellows as they lay contentedly on their fresh white couches, patiently submitting.

If one begins by pitying them, one ends by loving them. There are few who think otherwise of the place than a poverty-stricken home. A study of its intent, however, and, above all, a sympathetic visit made to it, reveal quite the opposite picture. "It has been said that the most important study of man is man. It may be added the most important period of man's life to investigate is childhood. Children

*Read by invitation at the meeting of the Guilford County Medical Society, Greensboro, N. C., December 5, 1904.

can be studied more scientifically than adults; they are nearer to nature and have been less influenced by the evils of the world."

In studying the disorders of childhood it is extremely important to be familiar with such practice. I will not give you a comprehensive review of the cases, but will summarize in a brief way.

Every case that could not be strictly classed as typhoid fever has been excluded. Eighty cases have been treated in the infirmary. Fifteen cases have been seen by Dr. Montague, twenty cases were treated by Dr. J. T. J. Battle for two weeks and eighteen cases were seen by him in consultation. The total deaths were two, a percentage of $2\frac{1}{2}$. Of the eighty cases, thirty-seven were males and forty-three females. The average age of all patients, ten years; the youngest five, the oldest sixteen. By the sexes we have the following mortality: Males, zero; females, two. Both deaths were due to parotid complication. No post-mortem examination was made; ante-mortem examination revealed in each case that both parotids were extensively involved—great swelling, but no pus. There was deep ulceration of the mouth. One of these showed almost tetanic symptoms and had to be fed through the interstices of the teeth. Although the histories are often incomplete, previous attacks of typhoid fever were not noted in any of the cases. None of the cases were abortive. The course of the disease was a little irregular. None of the cases had hemorrhages or perforation. The temperature was irregular in a great many, but never intermittent. This was due to two facts—first, as regards age, and second, to the treatment modifying the fever. Only a few followed closely the typical temperature curve on account of the cold bath.

Children, as a rule, show greater departure from the typical typhoid than do adults. One had sudden downward fall of temperature, followed by stool with blood streaks. No treatment for hemorrhage was given, but patient was closely watched.

The pulse in majority was out of proportion to the temperature. I found that those children who had previously suffered with intestinal trouble, and especially those who were emaciated from special diathesis, were sick longer than the robust. Fifteen were examined by the Widal test, and all gave positive reaction. The invasion in the majority was typical except for the sudden high rise of temperature. Only in one was there a pronounced chill, while in many there were slight shivering. The tongue in the majority of cases was typical, though in eight pointed out to me by Dr. Battle the papillae were not prominent. Two had diarrhoea; the rest were constipated. Rose-colored spots were seen in 60 per cent. of the cases. Abdominal symptoms were absent in eight or ten. Two only had diarrhoea. Tympanitis occurred in eight. Five had purulent otitis media and also abscess of the left parotid gland. The infection traveled along the Eustachian tube and Steno's duct from a deeply ulcerated mouth. This case had also dry brown tongue, sordes on the

teeth, involuntary stools, low, muttering delirium and pronounced subultus tendinum. Forcible restraint was necessary in one, as patient was walking about room in hallucinal manner. Two showed meningeal symptoms. One case uttered a constant automatic cry; his limbs were always flexed to abdomen and whole body in a state of rigidity. One had a tender, painful and swollen leg.

Complications were as follows: Two were complicated with general eczema; one was admitted with uncinaria; one was complicated with bronchitis; one was admitted with recent Colles fracture; one had a peculiar infection of the upper lip and was badly swollen; one was admitted with grave anemia; one was extremely emaciated before admittance; relapses occurred in three; recrudescence in five.

Cause.—I have looked up numerous and valuable contributions on this subject, and most writers on the causation of typhoid fever consider the disease propagated by infected milk or water. Naturally I laid more stress on these than any other mode of propagation, and, upon the appearance of the outbreak, closed a suspicious well, then the springs, and gave a general order to drink direct from the deep well, which is nearly nine hundred feet in solid rock. Examination of the milk and water showed no infection. In the meantime the privies were frequently cleaned and disinfected, and all stools of typhoid patients disinfected and buried. For years I had been denouncing our box-privy system. Dr. Stiles, United States Marine Service, when investigating some cases of uncinaria with me two years ago, spoke out strongly against the box privy. I could find no authority to sustain me in the theory that normal human feces could cause typhoid fever, but I was consumed with the idea and really predicted this outbreak in several of my annual reports to the trustees. My greatest dread, however, was that the privies would become infected and pollute our springs. Dr. Frederick P. Henry, of Philadelphia Hospital, believes that the bacillus coli communis may, outside of the body, be converted into the bacillus of Eberth, and cites Rodet and Roux investigation on that line. Von Pettenkofer traced the great Munich epidemic to Munich itself as the breeding place, and showed that the pollution of the soil of the city came principally from human excrement and middens. It has been made evident that no proper house drainage is possible without rational sewerage system, and in many places where epidemics were frequent subsequent sanitary work changed the hot-bed of typhoid fever and absolutely freed the places from disease, notwithstanding the fact that they still continue to drink from the same wells as before. In Munich the yearly average mortality was cut down from 208 to 46 after the new system of drainage. During the Spanish war there were 2,774 deaths from typhoid fever, and it was shown by bacteriologists that the lack of common-sense hygiene produced the trouble and that open privies caused more cases than did polluted water. Open privies cannot be protected from flies, and so long as one can get into feces

and thence alight upon the first article or dish of raw food that he happens to espy he is in a fair way to present to his host an infected repast. A very careful investigation has proven to us that the epidemic was caused by the privy system, and that the common house-fly was the carrier. I also believe that air pollution from the privies produced a slow intoxication, increasing under the prevalence of the cause day after day, until a point was reached when health was overcome.

Treatment.—I feel sure that by the skillful use of drugs and other medicinal measures lives have been saved in typhoid fever, and that in this series of cases I have observed immediate mitigation of the most threatening symptoms, followed by progressive improvement, and am justified in believing that recovery was due to the treatment pursued. I will admit, however, that there is no specific drug or any method yet known that will arrest the course of the disease, but I am hopeful that the day is not far distant when a specific will find its prey. Since it is impossible to arrest typhoid fever or abridge its duration by any therapeutic measures of which we are at present aware, the indication is to sustain the vital powers and to alleviate so far as possible the symptoms. The truth is, that nearly every remedy in the *Materia Medica* has been tried in typhoid fever; so appeal is made to every new remedy as fast as discovered. I have prescribed a new remedy very largely in this epidemic, but I am not prepared to say that it was in any way specific. The remedy, however, deserves mention, if only because it is the last used. This is Acetozone. I gave it in every case. In all cases over ten years of age fifteen grains were given by the prescribed method in twenty-four hours; under ten, according to age. In forty out of the series no other medicine was used. In all of the cases I treated no other antiseptic was used, except in eight or ten cases listerine and calomel. Dr. J. T. J. Battle gave it in the majority of his cases, but to some he gave Salol; others nothing but bath, with no appreciable difference as to results. No bad effects were observed from this remedy. I am sure that it exerted a favorable influence upon every case, and my conclusions are that it is a most valuable contribution to the therapy of this disease. No antipyretic drugs were used. I do not favor their use, fearing their well-known depressing action on the heart, and in cases treated properly from the beginning they are not necessary. Calomel was administered at an early period of the disease in every case to procure free purgation and also for its intestinal antiseptic effect. Alcohol and strychnia were given to meet special indications. Parotitis was treated symptomatically and surgically. Incidental or collateral symptoms were treated as they arose.

For the control of the pyrexia I used ice caps and the cold bath. The employment of cold in the treatment of typhoid fever in childhood demands a degree of caution. The cold application is in pro-

portion to the extent of surface to be cooled. The effect is more prompt and decided, the disturbances of circulation are greater, and reaction is more tardy. The effect of the bath was decided; the fall of temperature was generally about two degrees in twenty minutes. As a rule, after four or five baths were given, a striking modification of the whole clinical picture was seen. The mind became bright, headache ceased, the tongue rapidly cleaned and the appetite increased. The pulse reduced in frequency and increased in tension. The Brand method was not employed, as it involves discomfort and suffering in children, but a more conservative plan was followed. The bath point at first was 101, but afterward was changed to 102.

Our method of bath is as follows: Sanitary bath was given every child each morning, regardless of temperature. This consisted simply of tepid water and soap, followed by brisk toweling and an alcohol sponge. A clean towel was placed under the chin of each patient to keep the bed linen perfectly sanitary; the mouth of the patient was then thoroughly washed with a disinfectant, and patient allowed to rest. When the bath point was reached we gave what we termed the bed bath. I will state briefly its technique: The patient is made nude except loin cloth; a rubber sheet the size of the single bed is slipped under the patient, and a towel is immersed in cold water and wrapped around his head. A large bucket of water, varying in temperature according to condition of individual patient, is placed on a stool beside the bed. A large sponge is used to drip the water over the entire surface, and when the trough is full of water the patient is carefully turned on his side and the spinal column and back are thoroughly sponged with long strokes. At the end of ten or fifteen minutes all the water is sponged out of the rubber trough back into the bucket; the patient rubbed thoroughly with alcohol. The rubber sheet is withdrawn, ice bags are placed on abdomen and head, and the patient is then snugly but lightly covered.

I have gone over this series of cases rather discursively, and touched upon very few of the salient points; and while I have told you little that you were not already familiar with, I want to impress the fact that we should press forward in the hope of ultimate success in finding out a specific remedy or serum for this disease.—*Charlotte Medical Journal*.

[We wish to emphasize the point made by Dr. Julian as to the importance of properly caring for surface privies at all times. The very able commission appointed by the Surgeon-General to investigate the unusual outbreak of typhoid fever among our troops during the war with Spain, in their report, called attention to the facts referred to by the Doctor—that the *bacillus typhosus* not only persists in the intestines for a long time after apparent recovery, but that it is likewise found in healthy individuals, and that it is unquestionably transmitted by flies. The importance, therefore, of so caring for surface privies as to prevent access of flies—by completely and imme-

diately covering each evacuation with lime, dry earth or ashes and by having a flap behind so as to make it dark—is apparent. The necessity for promptly covering with a cloth the bowel discharges in a case of typhoid fever, and the thorough disinfection of the same at the earliest possible moment, is still more urgent.—Ed.]

REVIEW OF DISEASES FOR JANUARY, 1905.

NINETY COUNTIES REPORTING.

Ninety-five counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of January the following diseases have been reported from the counties named:

MEASLES.—Burke, many cases; Caldwell, 2; Camden, several; Chatham; Cherokee, 15; Chowan, 200 or 300; Clay, 25; Cleveland, a few; Currituck, 1; Durham, many; Edgecombe, 3; Martin, many; Mecklenburg; Mitchell, several; Moore, a few; Onslow, 10; Pitt, 2; Richmond, 1; Sampson, a few; Scotland, 1; Swain, a few; Wake, epidemic; Warren, 1; Washington, 4; Wayne—25 counties.

WHOOPING-COUGH.—Brunswick, several; Burke, a few; Cabarrus, 26; Craven, a few; Dare, 7; Durham; Franklin, many; Gaston, many; Graham, several; Greene, 5; Jackson, 12; Macon, 2; Madison; Martin, many; Mecklenburg; Mitchell, several; Moore, a few; Onslow, 10; Pitt, 1; Rutherford, a few; Union, 10; Wake, 7—22 counties.

SCARLATINA.—Alleghany; Bladen, 2; Caswell, 5; Durham, 5; Gaston, 1; Haywood, 1; Mecklenburg; Onslow, 5; Randolph, 2; Rockingham, several; Surry, 5; Union, 2; Wilkes, 3—13 counties.

DIPHTHERIA.—Caldwell, 3; Carteret, 1; Chatham; Craven, 1; Graham, 4; Granville, 8; Iredell, 2; Lenoir, 4; New Hanover, 5; Pender, a few; Person, 1; Stanly; Surry, 2; Union, 3; Wake, 1—15 counties.

TYPHOID FEVER.—Ashe, 6; Bertie, 1; Caldwell, 15; Chatham, several; Columbus, 4; Cumberland; Dare, 2; Duplin, 2; Edgecombe, 2; Granville, 4; Halifax, 2; Harnett, a few; Haywood, 2; Iredell, 3; Jackson, 1; Lenoir, a few; Madison, a few; New Hanover, 6; Pitt, 1; Randolph, a few; Richmond, 2; Scotland, 1; Stanly; Wake, 3; Yadkin, a few; Yancey, 1—26 counties.

MALARIAL FEVER.—Craven; Gates; Jones, in all parts.

MALARIAL FEVER, HEMORRHAGIC.—Craven, 1; Jones, 1.

CEREBRO-SPINAL MENINGITIS.—Jackson, 2.

INFLUENZA.—Alamance, general; Brunswick; Cabarrus, general; Carteret; Caswell; Clay; Currituck; Davidson; Davie, general; Duplin; Franklin, general; Gates; Guilford, general; Hyde, general; Iredell, in many parts; Johnston, general; Lenoir, general; Lincoln; Macon, general; Onslow, general; Randolph, in nearly all parts; Richmond; Surry, general; Wayne—24 counties.

PNEUMONIA.—Alamance, several; Ashe, 12; Bladen, 4; Burke; Cabarrus, 8; Camden, a few; Chowan, several; Davidson; Harnett; Jackson, 24; Mecklenburg; Mitchell; Moore, in all parts; Nash, 7; Pamlico; Pender; Randolph, in nearly all parts; Richmond; Sampson; Swain, a few; Wake, 2; Watauga, a few; Wayne, a few; Yadkin—24 counties.

MUMPS.—Caswell; Sampson.

SMALLPOX.—Anson, several; Ashe, 4; Beaufort, 4; Bertie, 1; Bladen, 19; Brunswick, several; Buncombe, 8; Camden; Cherokee, 40; Chowan, 11; Clay, 1; Cleveland, 7; Columbus, 16; Craven, 6; Cumberland, 5; Currituck, 10; Davie, 1; Durham, 6; Edgecombe, 3; Gaston, 2; Gates, 9; Granville, 24; Greene, 10; Guilford, 22; Halifax, 11; Harnett; Henderson, 9; Hertford, 30; Hyde, 2; Iredell, 2; Johnston, 2; Lenoir, 14; Mecklenburg, 3; Moore, 18; New Hanover, 21; Onslow, 121; Orange, 1; Pasquotank, 4; Pender, 4; Perquimans, 1; Pitt, 2; Randolph, 2; Richmond, about 25; Rockingham, 1; Sampson, 40; Scotland, 50; Transylvania, 2; Union, 20; Wake, 20; Wayne, a great many; Wilkes, 45; Wilson, 6; Yancey, 5—53 counties.

CHOLERA, IN HOGS.—Brunswick, Columbus and Pamlico.

No diseases reported from Alexander, Catawba, Northampton, Polk and Vance.

No reports received from Forsyth, McDowell, Montgomery and Robeson.

SUMMARY OF MORTUARY REPORTS FOR JANUARY, 1905.

	<i>White.</i>	<i>Col'd.</i>	<i>Total.</i>
Aggregate population	86,800	63,000	149,800
Aggregate deaths	107	128	235
Representing temporary annual death-rate per 1,000	14.8	24.2	18.8
<i>Causes of Death.</i>			
Typhoid fever	3	0	3
Scarlet fever	2	0	2
Malarial fever	1	2	3
Diphtheria	3	0	3
Measles	1	1	2
Pneumonia	16	21	37
Consumption	19	20	39
Brain diseases	6	2	8
Heart diseases	10	11	21
Neurotic diseases	1	4	5
Diarrhœal diseases	4	4	8
All other diseases.	37	60	97
Accident	3	3	6
Suicide	1	0	1
	<hr/>	<hr/>	<hr/>
Deaths under five years.	107	128	235
Still-born	26	42	68
	6	21	27

Mortuary Report for January, 1905.

TOWNS AND REPORTERS	POPULATION.			TEMPORARY ANNUAL DEATH-RATE PER 1,000.																			TOTAL DEATHS.		Deaths under five years.	Still-born.
	RACES.	By Races.		By Races.	Total.	Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neuritic Diseases.	Diarrhoeal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	By Races.	By Towns			
Charlotte Dr. F. O. Hawley.	W. C.	11,000 7,200	18,200	9.8 18.3	13.2	...	...	...	...	...	...	3	2	...	...	...	1	6	1	...	...	11	20	4	1
Durham Dr. N. M. Johnson.	W. C.	8,000 5,000	13,000	21.0 40.8	28.6	1	1	...	...	...	1	4	4	...	...	...	...	2	...	1	...	14	31	3	...
Edenton Dr. T. J. Hoskins.	W. C.	1,200 1,800	3,000	10.0 13.3	12.0	...	...	...	...	...	...	1	...	...	...	...	...	12	...	...	...	1	3	...	...
Elizabeth City Dr. I. Fearing.	W. C.	5,000 3,000	8,000	12.0 24.0	16.5	...	...	1	...	...	...	1	2	...	...	1	1	3	...	...	...	5	11	1	2
Fayetteville Dr. A. S. Rose.	W. C.	2,500 2,300	4,800	14.4 31.3	22.5	...	...	...	...	...	...	1	1	1	1	...	...	1	...	...	...	3	9	1	...
Goldsboro Robt. A. Creech, H. O.	W. C.	3,500 2,600	6,100	3.4 36.9	17.7	...	...	...	...	...	...	1	1	1	2	...	...	5	...	...	...	8	9	2	1
Greensboro Jno. S. Michaux, C. C.	W. C.	6,100 4,000	10,100	25.6 27.0	26.1	...	...	...	...	...	...	1	2	2	1	...	1	6	...	...	...	13	22	4	...
Henderson Dr. John H. Tucker.	W. C.	2,100 1,700	3,800	22.8 28.2	25.3	...	...	...	...	...	...	1	2	...	1	...	...	...	...	...	...	4	8	...	...
Laurelburg Dr. G. D. Everington.	W. C.	900 600	1,500	0.0 20.0	8.0	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	0	1	1	2
Lexington J. H. Moyer, Mayor.	W. C.	800 500	1,300	15.0 0.0	9.2	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	0	1	...	...
Monroe Dr. Jno. M. Blair.	W. C.	1,850 600	2,450	6.5 40.0	14.7	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	1	3	...	...
Oxford Dr. S. D. Booth.	W. C.	1,250 1,200	2,450	28.8 30.0	29.4	...	...	1	...	...	...	2	...	1	1	...	...	...	1	...	...	3	6	1	...
Raleigh T. P. Sale, Clerk B. H.	W. C.	8,000 5,800	13,800	19.5 16.6	18.3	...	...	1	...	...	...	3	2	...	2	...	...	5	...	...	...	13	21	3	2
Salem S. E. Butner, Supt. H.	W. C.	3,300 350	3,650	10.9 34.3	13.2	...	...	1	...	...	...	1	...	...	...	...	...	1	...	...	...	3	4	1	...
Sallsbury Dr. H. T. Trantham.	W. C.	3,900 2,500	6,400	6.2 24.0	13.1	...	...	...	...	...	...	...	1	...	1	...	...	1	...	3	...	2	7	1	...
Southport Dr. D. I. Watson.	W. C.	900 500	1,400	0.0 24.0	8.6	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	0	1	...	...
Tarboro Dr. W. J. Thigpen.	W. C.	2,000 500	2,500	6.0 0.0	4.8	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	0	1	...	...
Wadesboro Dr. J. H. Bennett.	W. C.	1,000 700	1,700	12.0 0.0	7.1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	0	1	...	...
Washington Dr. D. T. Tayloe.	W. C.	3,000 2,900	5,900	28.0 4.1	16.3	...	...	1	...	...	...	...	...	...	...	...	...	6	...	...	...	7	8	1	...
Weldon J. T. Gooch, Mayor.	W. C.	700 750	1,450	0.0 48.0	24.8	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	0	3	1	...
Wilmington Dr. Chas. T. Harper.	W. C.	10,000 11,000	21,000	15.6 22.9	19.4	1	...	1	...	...	...	3	1	2	1	...	3	1	...	...	...	13	34	2	3
Wilson Dr. W. S. Anderson.	W. C.	2,800 3,000	6,800	6.3 12.0	8.8	...	...	...	...	...	...	2	...	...	...	...	1	1	...	...	...	3	5	1	...
Winston Dr. J. L. Hanes.	W. C.	6,000 4,500	10,500	20.0 42.7	29.7	1	...	...	...	...	...	4	1	...	2	...	1	1	...	...	...	10	26	2	...

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the whole number of deaths occurring within the corporate limits during the above month."

County Superintendents of Health.

Alamance	Dr. H. R. Moore.	Jones.....	Dr. N. G. Shaw.
Alexander	Dr. C. J. Carson.	Lenoir	Dr. C. L. Pridgen.
Alleghany	Dr. Robt. Thompson.	Lincoln	Dr. John W. Saine.
Anson	Dr. J. H. Bennett.	McDowell	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon	Dr. W. A. Rogers.
Beaufort	Dr. D. T. Tayloe.	Madison	Dr. W. J. Weaver.
Bertie	Dr. H. V. Dunstan.	Martin.....	Dr. W. H. Harrell.
Bladen.....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin.
Brunswick	Dr. J. Arthur Doshier.	Mitchell.....	Dr. Virgil R. Butt.
Buncombe	Dr. D. E. Sevier.	Montgomery	Dr. M. P. Blair.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod.
Cabarrus.....	Dr. R. S. Young.	Nash	Dr. J. P. Battle.
Caldwell	Dr. W. P. Ivey.	New Hanover	Dr. W. D. McMillan.
Camden.....	Dr. C. G. Ferebee.	Northampton.....	Dr. H. W. Lewis.
Carteret	Dr. F. M. Clarke.	Onslow.....	Dr. E. L. Cox.
Caswell	Dr. S. A. Malloy.	Orange.....	Dr. C. D. Jones.
Catawba	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. T. A. Kirkman.	Pasquotank	Dr. J. B. Griggs.
Cherokee.....	Dr. B. B. Meroney.	Pender.....	Dr. R. J. Williams.
Chowan.....	Dr. T. J. Hoskins.	Perquimans.....	Dr. C. C. Winslow.
Clay	Dr. P. B. Killian.	Person	Dr. J. A. Wise.
Cleveland	Dr. B. H. Palmer.	Pitt.....	Dr. Zeno Brown.
Columbus.....	Dr. N. A. Thompson.	Polk	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph	Dr. W. J. Moore.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. F. J. Garrett.
Currituck	Dr. H. M. Shaw.	Robeson.....	Dr. H. T. Pope.
Dare	Dr. W. B. Fearing.	Rockingham	Dr. Sam Ellington.
Davidson.....	Dr. Joel Hill.	Rowan.....	Dr. W. L. Crump.
Davie	Dr. M. D. Kimbrough.	Rutherford.....	Dr. T. B. Twitty.
Duplin	Dr. A. J. Jones.	Sampson	Dr. John A. Stevens.
Durham	Dr. N. M. Johnson.	Scotland	Dr. A. W. Hamer.
Edgecombe	Dr. W. J. Thigpen.	Stanly.....	Dr. V. A. Whitley.
Forsyth.....	Dr. W. O. Spencer.	Stokes	
Franklin	Dr. R. F. Yarborough.	Surry	Dr. John R. Woltz.
Gaston.....	Dr. H. F. Glenn.	Swain.....	Dr. A. M. Bennet.
Gates.....	Dr. W. O. P. Lee.	Transylvania	Dr. C. W. Hunt.
Graham	Dr. V. J. Brown.	Tyrrell.....	
Granville	Dr. S. D. Booth.	Union	Dr. John M. Blair.
Greene.....	Dr. W. B. Murphy, Jr.	Vance.....	Dr. H. H. Bass.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. J. L. McCullers.
Halifax	Dr. I. E. Green.	Warren.....	Dr. M. P. Perry.
Harnett.....	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. F. Abel.	Watauga.....	Dr. H. McD. Little.
Henderson	Dr. J. G. Waldrop.	Wayne.....	Dr. Williams Spicer.
Hertford	Dr. C. F. Griffin.	Wilkes.....	Dr. W. P. Horton.
Hyde	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson.
Iredell	Dr. M. R. Adams.	Yadkin	Dr. T. R. Harding.
Jackson.....	Dr. R. L. Davis.	Yancey	Dr. J. L. Ray.
Johnston	Dr. Thel Hooks.		

[You are asked to fill out and mail one of these forms to the Superintendent of Health of your county on or before the third of each month, that he may use it in making his report to the Secretary of the State Board.]

Have any of the following diseases occurred in your practice during the month just closed. If so, state number of cases.

Whooping-cough ----- Typhoid Fever -----

Measles ----- Typhus Fever -----

Diphtheria ----- Yellow Fever -----

Scarlet Fever ----- Cholera -----

Pernicious Malarial Fever ----- Smallpox -----

Hemorrhagic Malarial Fever ----- Cerebro-spinal Meningitis -----

What have been the prevailing diseases in your practice?

Has any epidemic occurred among domestic animals? If so, what?

What is the sanitary condition of your section, public and private?

General Remarks: -----

----- M. D.

BULLETIN

OF THE

NORTH CAROLINA BOARD OF HEALTH

Published Monthly at the Office of the Secretary of the Board, Raleigh, N. C.

GEO. G. THOMAS, M. D., <i>Pres.</i> , Wilmington.	W. P. IVEY, M. D.-----Lenoir.
S. WESTRY BATTLE, M. D.---Asheville.	FRANCIS DUFFY, M. D.-----New Bern.
HENRY W. LEWIS, M. D.-----Jackson.	W. H. WHITEHEAD, M. D.----Rocky Mt.
J. L. NICHOLSON, M. D.-----Richlands.	J. L. LUDLOW, C. E.-----Winston.
RICHARD H. LEWIS, M. D., <i>Secretary and Treasurer</i> , Raleigh.	

VOL. XIX.

MARCH, 1905.

No. 12.

LEGISLATION

The legislation bearing on medical and health matters by the recent General Assembly consisted negatively in the defeat of a bill to charter an osteopathic society, granting a board of examiners with power to confer license, and of sundry special acts to grant license to practice medicine to individual illegal practitioners. The attitude of the Legislature toward bills of this character was very gratifying and demonstrated the solid position of our medical license law in public opinion. This satisfactory condition of affairs is attributable to no inconsiderable degree, we think, to the disposition which the State Medical Society, through its committee on legislation, supported by the Board of Medical Examiners, has always shown to do the fair thing and to avoid anything like persecution. It has been the custom of the Board of Examiners, since the right to register except upon presentation to the clerk of the court of a regular license expired, to grant upon the recommendation of the committee on legislation a special license without examination, a kind of permit to register, to those who, having failed for one reason or another to register at the proper time, would comply with the conditions of the original registration act, *c. g.*, by making oath that they were practicing medicine in this State prior to March 7, 1885. This has caused in two instances much dissatisfaction on the part of the local profession, but having no experience with legislatures they do not realize the importance of judicious concessions when occasion demands. We believe, however, that henceforth they will not be necessary.

The only positive legislation was important and valuable to the health interests of the people and consisted in the passage of "An act

to establish a State Laboratory of Hygiene." Under the "Act to protect water supplies" each water company was required to have made in the joint laboratory of the Agricultural Department and the Board of Health a monthly analysis of its water, and to pay therefor five dollars, but many companies failed to fully comply with the requirement and the income of the laboratory was in so far curtailed. Under the new act they will have to pay an annual tax of \$60, whether they neglect to have the analyses made or not, and so the income from that source will be more certain and somewhat larger than heretofore. The income from this source will be supplemented by a small appropriation from the general treasury. More was asked and the attitude of the Legislature was friendly, but the demand for money was so great that some curtailment was necessary. The following is a copy of the bill:

AN ACT TO ESTABLISH A STATE LABORATORY OF HYGIENE.

The General Assembly of North Carolina do enact:

SECTION 1. That for the better protection of the public health and to prevent the spread of communicable diseases there shall be established a State laboratory of hygiene, the same to be under the control and management of the State Board of Health.

SEC. 2. That it shall be the duty of the State Board of Health to have made in such laboratory monthly examinations of samples from all the public water supplies of the State. The board shall also cause to be made examinations of well and spring waters when in the opinion of any county superintendent of health or any registered physician there is reason to suspect such waters of being contaminated and dangerous to health. The board shall likewise have made in this laboratory examinations of sputum in cases of suspected tuberculosis, of throat exudates in cases of suspected diphtheria, of blood in cases of suspected typhoid and malarial fever, of *feces* in cases of suspected hook-worm diseases, and such other examinations as the public health may require.

SEC. 3. For the support of the said laboratory the sum of twelve hundred dollars is hereby appropriated and an annual tax of sixty dollars, payable quarterly, by each and every water company, municipal, corporate and private, selling water to the people, said tax to be collected by the sheriff as other taxes and paid by said sheriff directly to the treasurer of the State Board of Health, and the printing and stationery necessary for the laboratory to be furnished upon requisition upon the State Printer.

SEC. 4. Section seventeen of chapter one hundred and fifty-nine of the Laws of one thousand nine hundred and three is hereby repealed.

SEC. 5. This act shall be in force from and after its ratification.

In the General Assembly read three times, and ratified this 4th day of March, 1905.

**THE HYGIENIC MANAGEMENT OF CHILDREN, WITH ESPECIAL
REFERENCE TO THEIR DIET.***

BY LOUIS FISCHER, M. D.

Mr. President, Ladies and Gentlemen:

The kind invitation extended to me by your executive committee to speak on "The Hygienic Care of Children" is such an important topic that, while I feel only too willing to give my views on this subject, I crave your indulgence if I do not completely cover the ground in the time usually allotted to the reading of a paper.

The subject of hygiene is a broad one, and still when we boil it down and apply it to the child we find that it consists of—

1st. The prevention of disease.

2d. The careful maintenance of health by the strict enforcement of nature's laws pertaining to regularity in feeding, sleeping and enough exercise to stimulate the circulation of the body.

3d. The systematic training of the brain, with due regard to the physical welfare of the child in question.

The Prevention of Disease.—To prevent disease we must give the body a healthy foundation. This can seldom be accomplished, I maintain, unless we resort to maternal nursing.

When we deviate from nature's path we encounter disagreeable conditions, which frequently end in disease.

If the baby receives milk until its period of dentition we can thereby avoid most diseases which lay the foundation for future chronic disorders.

The modern tendency is to do away with maternal nursing and resort to substitute cows' milk feeding. This deplorable condition is one of the reasons for the susceptibility to those dreaded pulmonary diseases, and most especially to the prevalence of tuberculosis.

Let us compare in strength and endurance the child brought up in the tenements, amid unsanitary surroundings, but fed on human milk, with the child raised on cow's milk, living in fashionable quarters, with the best of hygienic care, and note the result. By comparison I have found that, in spite of unsanitary surroundings and poverty, the children raised on breast milk are well nourished. They do not succumb as readily to infectious diseases; if they do they possess latent energy, so that they weather the storm and regain their health. The child that is artificially fed lacks the stamina and has not the endurance of his breast-fed brother. He is very prone to infections, does not possess the latent vitality previously mentioned, and consequently his chances are much worse during his childhood and certainly during adolescence.

*Read by invitation before the February, 1905, meeting of the Hundred Year Club.

"The survival of the fittest" means to me that *the child who is started right with human milk and then given the proper care from a hygienic standpoint will stand a better chance to develop in life on a healthy foundation* than one reared on artificial food.

The bulk of diarrhoeal diseases, such as summer complaint, dysentery and the like, invariably occur in the artificially-fed infant. In like manner the majority of infants and children who suffer with rickets and have bow legs, knock knees, spinal curvatures, or children with scurvy or marasmus, were artificially-fed infants.

It is hardly in the province of this paper to go into details concerning the enormous infantile mortality which is still associated with bottle-feeding, nor do I wish to decry the enormous progress made in the hygienic management of the cow, the milker's hands and the stable in recent years. The modern sanitary measures applied to the dairy have reduced the introduction of filth and disease germs into cow's milk to a minimum. We are compelled, however, to subject cow's milk and all infant foods to steaming processes, such as sterilization or pasteurization, to render them sterile. Nature's laboratory as it exists in the human female breast furnishes, without steaming or sterilizing, an uncontaminated and nutritious milk, in which the question of germs from a stable need never enter.

Next in importance to the proper feeding of the child is to maintain the health of the body. What fresh food means to the stomach fresh air means to the lungs.

Ventilation.—Oxygen is the lung food which is necessary for the maintenance of the blood supply. This can only be given to a child by proper and constant ventilation.

It is surprising to see that even to-day most houses and apartments in this city, especially in winter, are improperly ventilated. To leave windows open at night is still regarded as dangerous. It is deplorable to see how frequently we are compelled to explain that fresh air is fresh air, whether it is night air or day air.

Conditions in cosmopolitan cities like New York demand maximum accommodations in minimum space. Thus it is that the large majority of children are compelled to live in crowded apartments, flats and tenement-houses. Some of these large apartments have entrances and furnishings that are very costly and elaborate, and blindfold the dweller as to the real living apartment. The majority of apartments in this city do not have sunshine excepting at intervals, and what is worse the ventilation is far from being thorough.

To bring up a child amid such surroundings is to handicap it.

Broadly speaking, we know that there are three elements requisite for the growth and development of plants: they are sunshine, fresh air, and moisture. If we compare the delicate structure of a growing infant with a plant we can easily understand why a child brought up in a modern flat or apartment, without the necessary factors, must as a result become anemic and show pallor of the skin, loss of appe-

tite and commence to fade. And why? First, because there is an absence of sunshine. Second, because fresh air is not regularly admitted. Third, because the air in a steam-heated or furnace-heated apartment is not as moist as it should be.

The tendency of medicine in the twentieth century consists in the prevention rather than in the cure of diseases. To illustrate this we need only to go back and see how universally vaccination is used to prevent or modify smallpox. What is true concerning smallpox applies in a lesser degree to the universal use of antitoxin as a preventive in rendering those exposed to diphtheria immune. To prevent such a fatal disease as diphtheria by an injection of antitoxin is a triumph of modern medicine. Modern social conditions, especially in our cosmopolitan cities, have wrought changes which it might be well to look into, as they affect the young mother and consequently they affect her child. The greatest evil of modern times is the overwhelming death-rate, due to diseases affecting the respiratory tract. Amongst them two diseases stand out most prominently: they are pneumonia and tuberculosis. Supposing we ask ourselves, Why is it that pneumonia and tuberculosis are so prevalent? One of the reasons certainly is that those human beings whose nose, throat and bronchial glands are in a receptive or subnormal condition have a fertile soil which permits the invasion and development of the various specific pathogenic germs which give rise to the diseases just named. In other words, if the nose and throat have had repeated catarrhal diseases, remnants of which still remain, then the seed of various diseases will find a fertile soil for their propagation. Thus I have found that in one of the large hospitals in this city most of the children that suffered with the acute infectious diseases had enlarged tonsils and adenoid vegetations in their throats.

The normal child frequently harbors many varieties of disease germs in the mouth, nose and throat. In good health and with healthy mucous membranes and glands these germs do not find root. On the other hand, the slightest chilling of the surface is enough to permit these disease germs to set up inflammatory conditions. The body loses its normal resisting power when there is a deficiency in the structure of the system, such as a weakened frame-work or when a blood disease exists.

The principal factor with which we contend to-day is rickets and scurvy in infancy. These diseases originate primarily through improper feeding. We can trace the susceptibility of some children in some diseases directly back to their nutrition.

Breast-fed children are known to be practically immune from the acute diseases, such as scarlet fever, measles and diphtheria, and it is believed that the breast milk of the mother contains protective substances which prevent the child from taking these diseases.

Of 500 mothers, educated and in good circumstances—the wealthy class—340 attempted to and were willing to nurse their infant. Of

this number 120 were able to nurse for a period of nine months; 89 were able to nurse part of the time—a total of 209. A balance of 291 were unable or unwilling to nurse their infant.

Five hundred mothers, scant education, poor circumstances, residing in the tenements—120 were able to nurse nine months, 43 were able to nurse part of the time, 37 resorted to artificial feeding.

RAW FOOD.

The constant use of boiled or sterilized milk frequently induces scurvy. The same is true where proprietary foods are used with boiled or sterilized milk. There is a living substance in raw milk which is destroyed by heat applied in the temperature required to sterilize milk.

When scurvy exists, feeding of raw milk, either cow's milk or human milk, raw steak juice or raw white of egg not only modifies the condition, but actually restores health to the child. Knowing this to be a fact and beyond experiment, it seems ridiculous to offset such experience by resorting to newer methods which time and experience have proven to be deleterious. Permit me to quote from my book on Infant Feeding:*

"Imitate nature in feeding, using raw milk. In this way we copy from nature just what she has ordained for woman to feed, for it must be admitted that breast milk (woman's) is raw milk. It is neither boiled, sterilized nor pasteurized. When the precautions mentioned in my first proposition are carried out there is no risk of infection. Do we ever stop to think how many millions of microbes lie dormant in the gastro-intestinal canal, ready to reinfect the sterilized milk? My plan is to give pure milk (properly diluted or pure) if the age warrants, and merely warm it immediately before feeding it to the infant—temperature of 100° F.

"On boiling, the change taking place is simply due to the coagulation of the globulin, or proteid molecule, which splits away from the inorganic molecule and thus renders it, as to the iron and fluorin, unabsorbable, and, as to the phosphatic molecule, unassimilable. This is the change that is so vital, and this only takes place when milk is boiled.

"It is evident that children require phosphatic and ferric proteids in a living form, which are only contained in raw milk. Cheadle says that phosphate of lime is necessary to every tissue; no cell-growth can go on without earthy phosphates; even the lowest form of life, such as fungi and bacteria, cannot grow if deprived of them. These salts of lime and magnesia are especially called for in the development of the structure.

"There is a certain deadness, or, to put it differently, absence of freshness, in milk that has been boiled or sterilized which causes

**Infant Feeding*, Louis Fischer, F. A. Davis, Comp. Phil.

disease in the infant just as the absence of fresh meats and green vegetables is known to cause scurvy in the adult."

The stomach is nature's laboratory, in which chemistry plays not only an analytical part, but also a decided synthetic part as well. The analysis consists in breaking up and subdividing food into its component parts. In this manner part is utilized, part destroyed. The part utilized forms blood corpuscles, lymph, bone and marrow cells. An infant's strength depends on its inheritance of a strong physique, but not only must the anatomical skeleton be healthy, but the structure must not be tainted with inherited diseases which undermine the development of the vital organs. Thus a child weighing nine or ten pounds at birth, commencing life with inherited syphilis, requires treatment to eradicate the poison introduced by inheritance.

When a child is born, even though it has a frail constitution, it may develop strength and health by resorting to natural methods of feeding. This entails the use of breast milk. In addition to the natural method of feeding, the hygiene of the skin and the body, and especially a thorough oxygenation of the lungs, is demanded. How different the result if we are compelled to forego human milk and resort to artificial feeding.

Given a weak infant, born with hereditary taint and deficient vitality, owing to inherited disease or inherited infirmity, then add to this improper feeding, and the outcome is not difficult to imagine.

Dr. J. Noer of Stoughton read a paper at the fifty-fourth annual meeting of the Wisconsin State Medical Society at Milwaukee, June 20-22, 1900, on "Substitute Infant Feeding in General Practice." He said that the problem was simple until 1890. Proprietary infant foods are to be condemned as absolutely unreliable and inadequate in their constituents. They should not be used except as a last resort or a temporary expedient when good dairy milk cannot be obtained or tolerated. This, however, does not apply to some of the latest German products. Clinically tested, these milks have all failed. It is difficult to explain why scientific laboratory milk mixtures are unsatisfactory substitutes, leading to mal-nutrition, etc. Laboratory milk in the hands of experts is a success in five per cent., a partial success in nine per cent., and a total failure in sixty-five per cent. of all cases. It does not solve the problem of substitute infant feeding. The filth in milk brought into our homes is terrible to contemplate. It is estimated that three hundred pounds of cow's excrement are furnished to New Yorkers each morning. An examination of ordinary uninspected milk as sold shows the presence of bacteria varying in numbers from 100,000 to 30,000,000 per cubic centimeter, as compared with the average of 1,000,000 bacteria per cubic centimeter found in the average specimen of sewage. It is to be considered that many of the bacteria found in milk are non-pathogenic. The problem is to obtain pure, uncontaminated dairy milk for infant feeding. This problem

seems to be solved by the Copenhagen plan of supervision and inspection.—*Journal of the A. M. A., July 7, 1900.*

The Teeth of School Children.—Dr. Michel examined the mouths of 11,762 children. He has endeavored to discover whether there exists any relationship between the frequency of dental caries and, first, breast feeding; second, artificial feeding (cow's milk), and third, the presence of the child during its early age in regions poor or rich in calcareous compounds.

Out of the 11,762 children, 7,763, or about 66 per cent., had been breast fed. These infants were weaned on an average at six and one-half months. Caries was found in the proportion of 11.4 per cent. This proportion is 8 per cent. less than that found in the remaining children fed by different means.

In a group of 620 children raised on different varieties of proprietary foods caries was present in 37 per cent. and rhachitis in 16 per cent.

From the foregoing statistics it can be seen that children raised on mother's milk have better and sounder teeth than those fed on cow's milk and artificial foods.

DYSPEPSIA.

There are quite a number of preventable diseases. One of these is dyspepsia. An infant is not born dyspeptic. Dyspepsia is always acquired. It is chiefly induced by over-feeding, too frequent feeding or the feeding of substances which the stomach cannot digest. The first evidence of improper nutrition is manifested by the scales. Regular, systematic weighing will be a valuable guide as to the physiological progress made by the child.

The Sleeping-room of a Child.—I do not believe in hot-house plants when applied to children. The infant in many families is put into a small, stuffy room for the night. Large, well-ventilated parlors or reception-rooms remain unused, and the baby is relegated to the rear. It is impossible for a child to oxygenate its lungs and thrive with the windows and doors closed and with the steam heat turned on. The throat of most people breathing this dry air is so parched that it is no wonder that children are restless in such an atmosphere. The remedy is simple. By permitting some boiling water to steam in the sleeping-room we can add enough moisture to overcome this unhealthy dryness of the air due to the steam heat or furnace.

In health the mucous surfaces of the body are moist. By breathing overheated air the mucous membranes become parched and there is an interference with the normal secretions of the glands. I believe that this is one of the main reasons for the development of catarrh in children.

How Can We Give Children Fresh Air on Stormy Days?—This question is very frequently put to me. My advice is: Open the windows, both top and bottom, in a large play-room or in the nursery.

Dress the child as though it were to be taken in the street. Shut off the heat. In a short time the room temperature will be the same as that in the street. The children should then be permitted to romp and play in the room. In the case of a young infant it can be wheeled about in a carriage and thus receive fresh air.

Hardening Children.—To strengthen children it is necessary to have them acclimated to the atmospheric changes in which they reside. This can be accomplished by gradually and systematically training the skin to withstand cold, warm and moist weather. It necessitates opening the pores daily by a bath, which must not be warm. Following the bath the circulation must be stimulated by friction. A child may be bathed in water having a temperature of 100° F. at birth. This temperature can be lowered five degrees every few days until a temperature of about 70° is reached. Following the bath a spray or a pitcher of cold water poured over the chest is a very valuable tonic. After the bath the clothing of the child is of paramount importance.

No doubt the majority of young mothers, in their anxiety to protect their children, use flannel binders for months and years, which, instead of doing good, is positively harmful. It restricts the proper expansion of the chest, interferes with pulmonary gymnastics and does not give the infant the freedom necessary during its automatic movements which is the infant's daily exercise.

The interesting discussion pertaining to the welfare of school children in our city has brought out some facts that are well worth considering. In a recent number of the New York *Herald* Dr. Maxwell, the city superintendent, states that "children are underfed, and as such are not prepared for active school work."

It is very evident to the writer, who has been intimately associated with school children during the last twenty years, that this statement of Dr. Maxwell's does not apply to the majority of children.

Poverty in the large number of tenement-house children means poorer homes, poorer clothing and poorer kind of shoes. But the nutritious tooth-forming, bone and muscle building food for the growing child, such as oatmeal, hominy, farina and rice, is found abundantly among the poor. Fish, which is always present among the poor, is a nutritious adjunct to the dietary of the young child.

The luxuries and the desserts of the rich, the alcoholic beverages, the stimulating spices and palate ticklers are absent from these homes.

The careful supervision of the health department in this city has given us a wholesome milk within the reach of the poorest purse.

In an out-patients service which I have had for years amongst the tenement-house population of the East Side and another service which I supervised on the West Side I have frequently questioned the children concerning their food.

Appearance of the Children.—These children as a rule look healthy and are bright, mentally and physically. They play in the streets and in their houses and are to all appearances contented. They do not miss luxuries, never having had them.

Nervous Manifestations in Older Children.—If an unbiased opinion were asked concerning which part of the human frame suffers most, the answer would be the brain and nervous system. This has been forcibly brought out in the New York *Herald* by the answer of Dr. George F. Shrady, which is the exact opposite of the opinion held by Maxwell. The school hours commence at 9 o'clock. The children must leave their homes about 8 o'clock. Most of them do not suffer for want of food, but for lack of time to eat their food. They do not take time to eat properly, but swallow their food without proper mastication. The lessons given to the growing child are very complicated. Most of them are too difficult for the infantile mind, hence we see the *underdeveloped brain struggling with problems it cannot master while at school. This requires home study, and not infrequently these children with an over-active brain sleep poorly, talk in their sleep and show other signs of a restless night.*

The School System of To-day gives the children too much brain food. Can we wonder at the result? Physically weak children, requiring eye-glasses for eye strain, tonics for loss of appetite, and general treatment for the large number of cases of St. Vitus' dance that we see in the schools. The mental development of all children is not alike; this any one, whether physician or layman, can prove to his own satisfaction. One child will be proficient in grasping historical subjects, and another of the same age and apparent development will be grossly deficient in the same subject. In many cases there is reason for it which dates back to the foundation of the infant. Just as we have children with weak bones and weak, flabby muscles in rickets, so also the brain and nervous system must suffer in development and in its scientific propensity. Over-strain and school breakdowns are far more frequent than is generally supposed, due to this very overcrowding of subjects in the weakling.

Occasionally we see infants who are artificially fed that will not thrive until a wet-nurse is secured. There is something "live" in human milk which is wanting in cow's milk.

Training the Child.—Bad habits in children are easily acquired. One of the most common habits in this connection is "thumb-sucking." This habit is apparent.

Habits much worse in their result pass unnoticed; such, for example, are the improper and irregular methods of feeding. Late hours at night deprive the nervous system of its necessary amount of rest. Late hours overtax the nervous system of a growing child.

The following course of education and training was met with some time ago in an educated family in this city:

A girl eleven years old was brought to me with a history of severe headaches and loss of appetite. Her mother said that she was very nervous, irritable and sensitive. She awoke at 7:30 A. M., was hurriedly dressed and had a cup of coffee, some fruit and a small piece of bread and butter, which she gulped, as she rarely had more than ten minutes for her breakfast. The girl was in school until 12 noon. She came home for a luncheon of a plate of soup and a chop, which she hurriedly swallowed, and went back to school to remain until 3 o'clock; took a music lesson from 3:30 to 4:30 and then studied her school lessons until 6 o'clock. The family took dinner at 6:30, in which she joined, and about 7:30 to 9 she studied her school lessons. Retired about 9:30, always being tired and complaining of headache.

If you will compare this case with those known to you, you will see that the picture is not overdrawn, and that in many instances parents expect too much from children, regardless of their physical and mental capacity.

Careless Management of Children.—In conclusion permit me to invite your attention to careless management. We see many people who believe that pains in the joints are symptoms of development and call them "growing pains." You can understand how serious this mistake may be when I assure you that hundreds of such "growing pains" are true rheumatism of the joints that has resulted in fatal heart disease.

Another common error is to attribute every ailment, such as cough, diarrhoea and the like, occurring during the first year, to teething. The symptoms of meningitis, abscess in the throat, middle-ear disease and starvation in marasmus frequently cause the infant to put its fingers or hand into the mouth.

The physician should be consulted, and only he should be the guide as to whether or no the cause of restlessness is really teething.

In nine cases out of every ten where teething was given as the cause of trouble, colic, dyspepsia, ear or throat trouble is the real cause of the restlessness.

The sensitive nervous organism of a growing child is frequently irritated by the kindness of parents. Thus, a taste of wine, or more frequently a liberal taste of beer, forms a part of the regular diet. Candy is given with such regularity as to constitute part of the regular feeding. In like manner I frequently find over-sensitive children with restlessness and insomnia, caused by the too liberal use of tea and coffee.—*The Dietetic and Hygienic Gazette.*

REVIEW OF DISEASES FOR FEBRUARY, 1905.**EIGHTY-EIGHT COUNTIES REPORTING.**

Ninety-five counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of February the following diseases have been reported from the counties named:

MEASLES.—Alamance, in all parts; Bertie, many; Bladen, a few; Camden, 5; Carteret, many; Caswell, 1; Chatham; Cherokee, 15; Chowan, in all parts; Clay, in all parts; Cumberland; Currituck, in all parts; Duplin, 4; Durham, a few; Edgecombe, 2; Franklin, several; Graham, many; Harnett, several; Jackson, 3; Johnston, 1; Madison; Mecklenburg; New Hanover, 8; Orange, in all parts; Pender, 4; Pitt, 2; Richmond, 10; Robeson, a few; Rockingham; Union, 10; Vance, many; Wake, in all parts; Warren, epidemic; Washington, 30 to 50—34 counties.

WHOOPING-COUGH.—Ashe, 30; Burke, a few; Cabarrus, 27; Caswell, several; Cherokee, 10; Clay, 7; Durham, a few; Franklin, many; Granville, 4; Greene, 15; Guilford, 2; Jackson, 10; Madison; Mecklenburg; Moore, a few; Pitt, 1; Richmond, a few; Rutherford, a few; Transylvania, several; Vance; Wake, 4; Yadkin—22 counties.

SCARLET FEVER.—Alleghany; Bladen, about 25; Graham, a few; Harnett, a few; Mecklenburg; New Hanover, 1; Rockingham; Rowan, 1—8 counties.

DIPHTHERIA.—Cabarrus, 2; Edgecombe, 2; Gaston, 1; Granville, 5; Guilford, 5; Iredell, 1; Jackson, 4; Mecklenburg; New Hanover, 1; Rockingham; Union, 1; Wake, 11; Wayne, a few—13 counties.

TYPHOID FEVER.—Ashe, 4; Caldwell, 8; Chatham; Craven, 2; Cumberland; Dare, 3; Duplin, 1; Forsyth; Graham, 1; Granville, 2; Jackson, 2; Lenoir, several; New Hanover, 5; Pitt, 1; Randolph, 2 or 3; Rockingham; Scotland, a few; Surry, 3—18 counties.

MALARIAL FEVER.—Gates, 4; Perquimans.

MALARIAL FEVER, PERNICIOUS.—Perquimans, 5.

INFLUENZA.—Alexander, general; Ashe; Bertie, general; Bladen; Brunswick; Burke, general; Caldwell, general; Carteret, general; Caswell, general; Catawba; Clay, in all parts; Cleveland; Craven, general; Currituck, general; Dare; Davie, general; Franklin, general; Gates, general; Granville; Guilford, general; Halifax, general;

Harnett; Hertford, general; Hyde, general; Lenoir, in all parts; Lincoln; McDowell; Moore; New Hanover, general; Pasquotank; Pender; Person; Randolph, general; Richmond; Sampson, many; Surry, general; Warren, general; Watauga, a few; Wayne; Yancey—40 counties.

PNEUMONIA.—Alamance, in all parts; Ashe, 18; Burke, in all parts; Cabarrus, 12; Camden, 3; Caswell, in all parts; Catawba; Chowan; Clay, 1; Currituck, 2; Gates, 2; Graham, 2; Greene, 15; Halifax, in most parts; Henderson, a few; Hyde, 3; Jackson, 5; Johnston, in all parts; Moore; Nash, 8; New Hanover, 7; Northampton; Pamlico, in most parts; Person; Randolph, in all parts; Sampson, many; Swain, a few; Transylvania, a few.

MUMPS.—Cumberland, in all parts; Sampson.

VARICELLA.—Cumberland, in all parts; Sampson.

SMALLPOX.—Alamance, 15; Anson, several; Bladen, 1; Brunswick, several; Caldwell, 12; Camden, 16; Chatham, 5; Cherokee, 30; Cleveland, 3; Craven, 2; Cumberland, 1; Currituck, 1; Davidson, 2; Davie, 6; Duplin, 33; Durham, 2; Edgecombe, 12; Franklin, 5; Gaston, 8; Gates, 13; Greene, 15; Guilford, 13; Halifax, about 40; Harnett, 12; Henderson, 9; Iredell, 5; Johnston, 3; Lenoir, 24; Madison, 6; Mecklenburg, 9; Moore, 4; Nash, 69; New Hanover, 36; Northampton, 1; Pasquotank; Pender, 8; Perquimans, 2; Person, 3; Pitt, 6; Randolph, 11; Richmond, 20; Robeson, a few; Rockingham, 1; Rowan, 1; Sampson, 12; Stanly, 6; Transylvania, several; Union, 15; Wake, 9; Wayne, several; Wilkes, 30; Wilson, 2; Yancey, several—53 counties.

BLACKLEG, IN CATTLE.—Transylvania, epidemic; Watauga, a few cases.

CHOLERA, IN CHICKENS.—Gates.

CHOLERA, IN HOGS.—Brunswick; Washington.

HYDROPHOBIA, IN DOGS.—Wilkes, epidemic.

No diseases reported from Beaufort, Buncombe, Haywood and Polk.

No reports received from Columbus, Jones, Macon, Martin, Mitchell, Montgomery and Onslow.

SUMMARY OF MORTUARY REPORTS FOR FEBRUARY, 1905.

 TWENTY-THREE TOWNS.

	<i>White.</i>	<i>Colored.</i>	<i>Total.</i>
Aggregate population	87,300	61,150	148,450
Aggregate deaths	121	131	252
Representing temporary annual death-rate per 1,000	16.6	25.7	20.4
<i>Cause of Death.</i>			
Malarial fever	1	0	1
Diphtheria	0	1	1
Measles	4	1	5
Pneumonia	17	27	44
Consumption	13	13	26
Brain diseases	10	8	18
Heart diseases	11	8	19
Neurotic diseases	1	3	4
Diarrhœal diseases	3	4	7
All other diseases	54	60	114
Accident	5	6	11
Suicide	2	0	2
	<hr/>	<hr/>	<hr/>
	121	131	252
Deaths under five years.....	28	37	65
Still-born	6	16	22

Mortuary Report for February, 1905.

TOWNS AND REPORTERS	RACES.	POPULATION.		TEMPORARY ANNUAL DEATH-RATE PER 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrheal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	TOTAL DEATHS.		Deaths under five years.	Still-born.
		By Races.	Total.	By Races.	Total.																	By Races.	By Towns.		
Charlotte	W.	11,000	9.8																			9	23	4	1
Dr. F. O. Hawley.	C.	7,200	21.7		14.5																	13	23	7	3
Durham	W.	8,000	30.0																			20	39	6	1
Dr. N. M. Johnson.	C.	5,000	45.6		36.0																	19	39	3	3
Edenton	W.	1,200	40.0																			4	9		
Dr. T. J. Hoskins.	C.	1,800	33.0		36.0																	5	9		
Elizabeth City	W.	5,000	16.8				1															5	12	4	
Dr. I. Fearing.	C.	3,000	20.0		18.0																	7	12	3	2
Fayetteville	W.	2,500	28.8																			6	11	1	
Dr. A. S. Rose.	C.	2,300	26.1		27.5																	5	11	2	
Goldsboro	W.	3,500	24.0																			7	14	1	
Robt. A. Creech, H. O.	C.	2,600	32.3		27.5																	7	14	2	1
Greensboro	W.	6,100	13.7																			7	15	3	
Jno. S. Michaux, C. C.	C.	4,000	24.0		17.8																	8	23	2	2
Henderson	W.	2,100	17.1																			3	7		
Dr. John H. Tucker.	C.	1,700	28.2		22.1																	4	7		
Laurinburg	W.	900	26.6																			2	3		
Dr. G. D. Everington.	C.	600	20.0		21.0																	1	3		
Lexington	W.	3,000	8.0																			2	3		
J. H. Moyer, Mayor.	C.	600	20.0		10.0																	1	3		
Marion	W.	800	15.0																			0	1		
Dr. B. S. Cheek.	C.	400	0.0		10.0																	0	1		
Monroe	W.	3,250	0.0																			0	1		
Dr. Jno. N. Blair.	C.	750	16.0		3.0																	1	1		
Oxford	W.	1,250	28.8																			3	7		
Dr. S. D. Booth.	C.	1,200	40.0		34.3																	4	7		
Raleigh	W.	8,000	21.0																			14	24	2	
T. P. Sale, Clerk B. H.	C.	5,800	20.7		20.9																	10	24	3	
Salem	W.	3,300	10.9																			3	4	1	1
S. E. Butler, Supt. H.	C.	350	34.3		13.1																	1	3		
Southport	W.	900	0.0																			0	0		
Dr. D. I. Watson.	C.	500	0.0		0.0																	0	0		
Tarboro	W.	2,000	6.0																			1	2		
Dr. W. J. Thigpen.	C.	500	24.0		9.6																	1	2		
Wadesboro	W.	1,000	12.0																			1	2		
Dr. J. H. Bennett.	C.	700	17.1		14.1																	1	2		
Washington	W.	3,000	16.0																			4	10		
Dr. E. M. Brown.	C.	2,900	24.8		20.3																	6	10		1
Weldon	W.	700	34.3																			2	2		
J. T. Gooch, Mayor.	C.	750	32.0		33.1																	2	4		
Wilmington	W.	10,000	19.2																			16	33	3	2
Dr. Chas. T. Harper.	C.	11,000	18.5		18.8																	17	33	5	4
Wilson	W.	3,800	6.3																			2	7	1	
Dr. W. S. Anderson.	C.	3,000	20.0		12.3																	5	7	3	
Winston	W.	6,000	16.0				1															8	22	2	1
Dr. J. L. Hanes.	C.	4,500	37.3		25.1																	14	22	4	

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

County Superintendents of Health.

Alamance	Dr. H. R. Moore.	Jones.....	Dr. N. G. Shaw.
Alexander	Dr. C. J. Carson.	Lenoir	Dr. C. L. Pridgen.
Alleghany	Dr. Robt. Thompson.	Lincoln	Dr. John W. Saine.
Anson	Dr. J. H. Bennett.	McDowell	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon	Dr. W. A. Rogers.
Beaufort	Dr. D. T. Tayloe.	Madison	Dr. W. J. Weaver.
Bertie	Dr. H. V. Dunstan.	Martin.....	Dr. W. H. Harrell.
Bladen.....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin.
Brunswick	Dr. J. Arthur Doshier.	Mitchell.....	Dr. Virgil R. Butt.
Buncombe	Dr. D. E. Sevier.	Montgomery	Dr. M. P. Blair.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod.
Cabarrus.....	Dr. R. S. Young.	Nash	Dr. J. P. Battle.
Caldwell	Dr. W. P. Ivey.	New Hanover	Dr. W. D. McMillan.
Camden.....	Dr. C. G. Ferebee.	Northampton.....	Dr. H. W. Lewis.
Carteret	Dr. F. M. Clarke.	Onslow.....	Dr. E. L. Cox.
Caswell	Dr. S. A. Malloy.	Orange.....	Dr. C. D. Jones.
Catawba	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. T. A. Kirkman.	Pasquotank	Dr. J. B. Griggs.
Cherokee.....	Dr. B. B. Meroney.	Pender.....	Dr. R. J. Williams.
Chowan.....	Dr. T. J. Hoskins.	Perquimans.....	Dr. C. C. Winslow.
Clay	Dr. P. B. Killian.	Person	Dr. J. A. Wise.
Cleveland	Dr. B. H. Palmer.	Pitt.....	Dr. Zeno Brown.
Columbus.....	Dr. N. A. Thompson.	Polk	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph	Dr. W. J. Moore.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. F. J. Garrett.
Currituck	Dr. H. M. Shaw.	Robeson.....	Dr. H. T. Pope.
Dare	Dr. W. B. Fearing.	Rockingham	Dr. Sam Ellington.
Davidson.....	Dr. Joel Hill.	Rowan.....	Dr. W. L. Crump.
Davie	Dr. M. D. Kimbrough.	Rutherford.....	Dr. T. B. Twitty.
Duplin	Dr. A. J. Jones.	Sampson	Dr. John A. Stevens.
Durham	Dr. N. M. Johnson.	Scotland	Dr. A. W. Hamer.
Edgecombe	Dr. W. J. Thigpen.	Stanly.....	Dr. V. A. Whitley.
Forsyth.....	Dr. W. O. Spencer.	Stokes	
Franklin	Dr. R. F. Yarborough.	Surry	Dr. John R. Woltz.
Gaston.....	Dr. H. F. Glenn.	Swain.....	Dr. A. M. Bennet.
Gates.....	Dr. W. O. P. Lee.	Transylvania	Dr. C. W. Hunt.
Graham	Dr. V. J. Brown.	Tyrrell.....	
Granville	Dr. S. D. Booth.	Union	Dr. John M. Blair.
Greene.....	Dr. W. B. Murphy, Jr.	Vance.....	Dr. H. H. Bass.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. J. L. McCullers.
Halifax	Dr. I. E. Green.	Warren.....	Dr. M. P. Perry.
Harnett.....	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. F. Abel.	Watauga.....	Dr. H. McD. Little.
Henderson	Dr. J. G. Waldrop.	Wayne.....	Dr. Williams Spicer.
Hertford	Dr. C. F. Griffin.	Wilkes.....	Dr. W. P. Horton.
Hyde	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson.
Iredell	Dr. M. R. Adams.	Yadkin	Dr. T. R. Harding.
Jackson.....	Dr. R. L. Davis.	Yancey	Dr. J. L. Ray.
Johnston	Dr. Thel Hooks.		

